## Hackers for hire

Rebels go legit, launch security unit. **In Depth, 81**

## End to deluge?

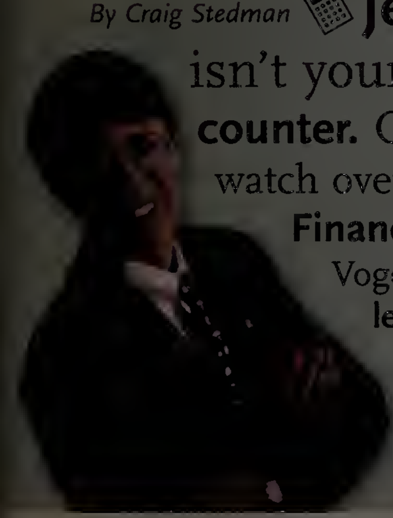
'Spam King' seeks a polite E-mail avenue. **6**

## Global rollouts

Tips on how to survive them. **Follows page 40.**

# COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
April 6, 1998 · Vol. 32 · No. 14 · 126 pages · $4/Copy



BLACK/TOBY

*By Craig Stedman*

**Jeff Vogelmann** isn't your typical **bean counter.** Oh sure, he keeps watch over the books at **Rand Financial Services, Inc.** But Vogelmann also has **taken the lead** in working with consultants to develop a **data warehousing application** that will funnel information to executives and

**CFO,** page 20

# The next IT generation

## PEPSICO, FRITO-LAY TO MERGE IS UNDER NEW CIO

*By Julia King and Thomas Hoffman*

PEPSICO, INC. AND Frito-Lay, Inc. already share common retail distributors and consumers. Soon they also will share common information systems and staff as part of a massive IS overhaul under the direction of a new 37-year-old chief information officer.

Steve Schuckenbrock last week moved from his CIO post at PepsiCo's $10 billion Frito-Lay subsidiary in Plano, Texas, to $21 billion PepsiCo's headquarters in Purchase, N.Y. There, he will lead a combined IS unit of 1,000 employees.

The consolidation was designed to yield economies of scale from the two companies' information technology investments. Combined, those investments totaled more than $400 million last year.

More important, the consolidation could significantly bolster brand loyalty and the companies' product volumes in the marketplace. By sharing data

**PepsiCo,** page 101

## Manageability overtakes PC upgrades

*By April Jacobs*
PALM SPRINGS, CALIF.

MOORE'S LAW soon may hit technical limits, its famous author said last week. But some users said they have already hit that wall and have decided they don't need to double their PC power every 12 to 18 months.

That doesn't surprise analysts. Chris Goodhue at Gartner Group, Inc. in Stamford, Conn., said Gordon Moore's golden rule may not be relevant to many business users in the next few years. Moore's Law states that the computing power available per dollar will double every 12 to 18 months.

The influential research group is telling its clients to stop buying the latest PC releases for average business users [CW, March 3, 1997]. Instead,

**Manageability,** page 101

## Expertise No. 1 service need

*By Julia King*

More companies are overwhelmed these days by the breakneck pace of technology change, mammoth year 2000 projects and a skills shortage that won't quit. So they are pushing aside objectivity concerns and flocking back to vendors for technology guidance and services.

Today, technical knowledge and expertise rank as users' No. 1 criterion when selecting an information technology services provider, according to a recent survey of 800 users by International Data Corp. in Framingham, Mass.

Vendor neutrality, by con-

**Expertise,** page 100

INSIDE THIS ISSUE

### Pricing precipice

Cabletron switches CEOs, faces battle on price. Page 3

### Not your parents' GM

Automaker snubs EDS, awards contract to CSC. Page 4

### USE THIS? NO SALE!

Frontline field staff resists automation software. Page 6

# LONELY IN PARADISE

Brian Gavaruso is desperate for you to join him in Florida! After spending many weeks and tons of money in a dozen cities, his IT talent search has yielded one result: an "almost" qualified candidate who has two other job offers and a counteroffer. *Computerworld*'s first Quarterly Hiring Outlook finds that this Eden is starting to look pretty dismal.

**Quarterly Hiring Outlook,** page 84

MICHAEL PRICE

NEWSPAPER

FASTER DATA WAREHOUSING

Got mountains of data in a dozen different formats that you need to select, reformat, aggregate, and sort? SyncSort™ is optimized to do the job—fast. Use it with more specialized warehousing tools to slash your processing time. To arrange a **free trial**, call us at (201) 930-8200. Or if you'd prefer more information first, we'll send you a copy of "Six Data Warehouse Tasks Made Easier with SyncSort™"

syncsort

Tel (201) 930-8200 dept. 48CWS
Fax (201) 930-8290 dept. 48CWS
http://www.syncsort.com/48cws

©1998 Syncsort Incorporated.

Visit us at IT Forum, Booth 752 and Data Warehouse World, Booth 439,
April 28-30, Moscone Convention Center, San Francisco.

UP FRONT

# Opening day

It's been an off-season of big trades and bigger contracts, and if spring training is any indication, this will be an incredible year 2000 consulting season.

I'll put my money on 2000 Maniacs LP. The Ledyard, Conn.-based researchers wowed 'em last season with a $4.2 trillion year 2000 crisis forecast, beating the previous record by 17%. The secret? Hidden legal costs. Starting Alarmist Brent Doomsayer, obtained in the off-season from the Florida Morons, should be a major source of CIO depression this season. The Maniacs will reportedly try to crack the elusive $4,000-per-head conference fee barrier this fall.

You also gotta like those scrappy Pittsburgh Pundits, the IT consultants who surprised everyone last year by calling the Feds' $4.7 billion year 2000 ineptitude. Gloomy coach Frank Bugwhacker could send a Christian Scientist scurrying for the Advil. They'll be whining and wailing in the Iron City this summer.

> **Remember Consulting 101, guys: Sell fear**

It's a rebuilding year for BooBoo Group. The Boston-based researcher missed out on a fee bonanza two years ago by saying year 2000 was no big deal. Remember Consulting 101, guys: Sell fear. Armed with a newfound siege mentality and terrifying predictions about embedded system failures, they're on the comeback trail.

My favorite dark horse is Millennium Madness Corp. in Trumbull, Conn. What a woefully wretched bunch of pessimists! Sources tell me their secret weapon is a 108-person poll that they think could send year 2000 repair estimates soaring past the $10 trillion mark. The key? Factoring in lost opportunity costs. The league may have to bring back the instant replay rule to judge this sleight of hand.

MVP choice: Frank Brickbat. Watch this exiled former CIO turn year 2000 failure at his own company into a lucrative consulting business. If that's not all-star material, I don't know what is!

Paul Gillin, *Editor*
Internet: *paul_gillin@cw.com*

THE FIFTH WAVE

Mr. Grady had a way of getting more out of an online project than other teachers.
RICH TENNANT
Ms. Stubbs' 7th Grade Class
CLOGGING 'n Squash Carving
Mr. Grady's 6th Grade Class
GLOBAL ECONOMIC STABILITY

E-Mail Rich Tennant at the5wave@tiac.net

# Users: Unrealistic pricing is Cabletron's Achilles' heel

## ▸ *Issue already costing company business*

*By Bob Wallace*

FORGET CABLETRON'S management woes. Unrealistically high product pricing is what could end up costing the networking company big.

The abrupt departure of Don Reed, the Rochester, N.H., vendor's second CEO in eight months, was the talk of the industry last week. But for seven of Cabletron's largest customers, pricing is the issue that will make or break the company.

"Their pricing is way out of the ballpark, and that's a big part of their problem," said Jeff Litterick, a communication network analyst for the state of South Dakota in Pierre.

The state has invested more than $3 million in Cabletron Systems, Inc. switches and hubs in its statewide network and is one of the vendor's biggest customers.

Litterick said that although Cabletron's desktop Ethernet switches receive high marks for technology, they are 40% to 50% more expensive per port than those of its rivals.

### STABILITY AN ISSUE

Other longtime users agree. The vendor's pricing "hurts them in the market and has got people wondering if the company is as stable as it should be," said Terry Nifong, a network design analyst at Monsanto Corp. in St. Louis.

In an interview with *Computerworld* [CW, Jan. 19], then-CEO Reed said he was re-evaluating his company's "unrealistic" pricing.

Reed may be gone, but co-founder and new CEO Craig Benson is picking up the baton.

Users can look to next month's Network/Interop '98 show, where Benson promised to roll out low-cost, next-generation switches. However, he wouldn't provide details.

Analysts attribute Cabletron's financial situation — it posted its first quarterly loss two weeks ago — to the company largely missing the transition from shared-media hubs to LAN switches and to its high product pricing.

Two years ago, shared media hubs made up roughly 70% of Cabletron's business, but now they account for less than 20%, Benson said in a teleconference. "We lost $700 million to $800 million in revenue that we had to make up someplace else," he said. Cabletron claims it eventually made up the difference.

The company declined to make Reed and Benson available for interviews last week.

Some users believe Benson has more vision than Reed when it comes to technology direction.

"Having Craig as CEO will be a good move because he has proven he can get the job done," said Tom Landis, chief network officer at University of Maryland Medical System in Baltimore.

"Reed seemed kind of quiet and laid-back and didn't seem to be forward-thinking," Landis said.

In January, Reed said he wanted Cabletron to buy switch/router vendor Yago Systems, Inc. and other vendors, while developing products for the carrier/Internet services provider market and launching an electronic-commerce World Wide Web site.

Before resigning, Reed finished the Web site and the Yago purchase. □

**KINKS IN THE CABLE**

Cabletron's highs and lows:

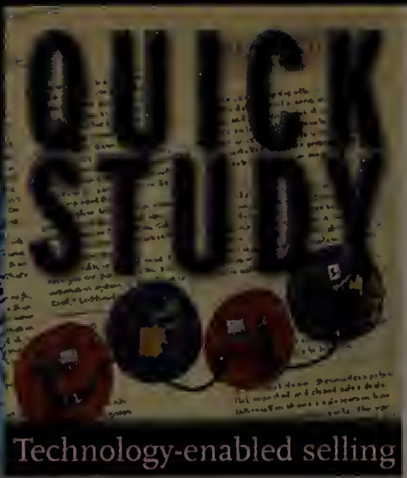
Don Reed

Craig Benson

| | |
|---|---|
| **Aug. 6, 1997** | CEO and co-founder Bob Levine resigns; **Don Reed** named president and CEO |
| **Nov. 25, 1997** | Buys Digital's network products unit for $430M |
| **Dec. 16, 1997** | Lays off 600 workers, closes some plants |
| **Jan. 14, 1998** | Buys switch/router vendor Yago Systems for $213M |
| **March 23, 1998** | Posts $6.3M quarterly loss, its first ever |
| **March 24, 1998** | Lays off 180 manufacturing employees |
| **March 30, 1998** | Reed resigns, replaced by co-founder **Craig Benson** |
| **April 1, 1998** | Stephan Gray (senior vice president of corporate marketing) and Mark Truhlar (senior director of network management software) resign |

Virtual reality: the next BIG thing?
Futurist James Bailey thinks so. Find out why in a RealAudio interview
@COMPUTERWORLD
www.computerworld.com/news

How application developers are juggling the complexities of Java, integrating legacy applications with the Web, year 2000, build vs. buy and CORBA vs. DCOM. **Review Center, page 75**



Technology-enabled selling: much more than just contact management software. **QuickStudy, page 29**

# In this issue

## NEWS

6 **Spam king abdicates**, promises to ask or pay before sending commercial E-mail.

8 **Nontechies drive** technology projects, seeing a bottom-line benefit from systems IS used to dominate.

10 **Sun, IBM promise** to create a Java standard, but crucial details are missing.

14 **Marketers prepare** for automation that helps track leads and customer behavior.

16 **EDI users confront** new issues as the venerable payment method hits the 'net.

100 **AOL launches virtual** private network, but users scoff at its promise of reliability.

### QUICKSTUDY

29 **Technology-enabled selling:** Why do the integrated systems that include sales force automation have a high failure rate?

### OPINION

12 **IRS sails toward** disaster with yet another money-draining, lost-cause IT overhaul, Frank Hayes writes.

33 **Teen-agers are sneaking into** corporate IS. You'd help them, wouldn't you? Michael Schrage asks.

## TECHNOLOGY SECTIONS

### CORPORATE STRATEGIES

39 **CFOs struggle** to gauge real costs and profits and justify technology spending.

39 **Users ally** with vendors to build technology, but should they sell it later?

### THE INTERNET

43 **Manufacturer saves** by automating expenses but saves more by not requiring approvals on most reports.

43 **Vendor vows** faster Internet connections with plug-ins for client and server.

### THE ENTERPRISE NETWORK

49 **Start-up builds** its business with a virtual net to connect acquisitions fast.

49 **R/3 promises** much but requires management tools to make it work.

49 **Hydra delivers** on many of its promises as a thin-client server version of NT.

### SOFTWARE

55 **Visualization software saves** furniture maker time in the sales cycle.

55 **Trio oversees** rollout of SAP R/3 because one manager isn't enough.

### SERVERS & PCs

57 **Remote backup is** becoming more popular, and more tools ship to make it possible.

57 **Microsoft defines** requirements for PCs that will ship next year.

57 **IBM eases** discretionary spending rules, but not for everyone.

### DATA WAREHOUSING

65 **Experts warn** users to beware of data marts as a substitute for a warehouse.

65 **Aetna uses** a data warehouse to help it manage a health care practice.

## FEATURES

### MANAGING

70 **Year 2000 forces** other projects to wait as IS struggles to fix date problems.

### REVIEW CENTER

75 **Users hesitate** to act on development plans, seeking which trend to follow.

76 **Profiles offer** examples of how three user companies plan applications.

### IN DEPTH

81 **Rebel survives** torture in the Philippines and turns a hacking career into a security consulting gig.

### IT CAREERS

84 **Hiring will continue** to pose problems, according to our quarterly outlook.

## ETC.

Company index ____ 99
Editorial/Letters ____ 32
How to contact CW ____ 99
Inside Lines ____ 102
Stock Ticker ____ 98

# GM test-drives outsourcing model

▸ *Company signs CSC pact, passes over EDS*

*By Julia King*

GENERAL MOTORS CORP. last week awarded its first competitive outsourcing contract in more than a decade.

The world's largest company hired Computer Sciences Corp. (CSC) to develop applications and provide LAN, help desk and other services to GM's Locomotive Group in La Grange, Ill. CSC will handle Phase 1 of the group's multimillion-dollar, multiyear SAP AG R/3 project set to begin by early 1999.

The five-year, $100 million contract represents GM's first big step away from Electronic Data Systems Corp., which it spun off in 1996. EDS, in Plano, Texas, will continue to handle mainframe computing, wide-area networks and year 2000 remediation work at the Locomotive Group.

But CSC, in El Segundo, Calif., now will act as GM users' first point of contact with information technology at the $2 billion locomotive unit. CSC will offer jobs to about 120 nonmanagement EDS employees.

**Under the terms of its spin-off agreement with EDS, GM can bid up to 6% of its EDS-related contracts to other vendors over the next three years. GM's annual IT budget is about $6 billion.**

Beyond that, exactly how the two providers will work together "is a process being developed in real time," said Dana Deasy, chief information officer at the Locomotive Group.

Last week's contract came after an intensive eight-month bidding process that involved five finalists, including the once-entrenched EDS, which observers foresee playing an ever-shrinking role at GM.

"This is payback time for EDS," said Stan Goldman, president of TBI, Inc., an IT consultancy in Woodcliff Lakes, N.J. GM is "going to diminish EDS's influence over their IT group contract by contract," he said.

Deasy described the CSC contract process as a "test case" and confirmed that it would be used to evaluate vendors in future outsourcing deals.

Under the contract, GM's six-person team required bidders to detail how they would meet 40 "critical deliverables," including onetime projects, such as an initial IT asset inventory, and ongoing services, such as help desk support.

Bidders also had to spell out what percentage of their fee they would forfeit if they failed to meet preset service levels. Other factors GM considered included pricing, quality of the vendor's management team, compliance with the request for proposals and the vendor's ability to provide value-added services such as expertise in SAP's R/3 software, on which GM has standardized.

**GM Locomotive Group CIO Dana Deasy says the CSC contract is a "test case" for evaluating future vendors**

### MAPPING OUT A PLAN

Deasy said GM "spent a great deal of time scripting what-if scenarios." Year 2000 work is a prime example. "We had to ask ourselves how we would handle turning over applications to a new company given that we're in the midst of remediation work with EDS," he said.

Eventually, a transition plan was worked out: EDS will continue to fix systems and give them to CSC once they have been completely remediated, tested and certified, Deasy said.

"It was much more rigorous and took longer than other contracts of its size. It was GM's first opportunity to test the marketplace," said Heidi Trost, a CSC vice president in charge of the GM contract.

By comparison, Trost noted that CSC's $1.5 billion, eight-year deal with Hughes in 1994 took only four months to put together. GM acquired Hughes in the late 1980s, but Hughes wasn't included in GM's original services agreement with EDS. ☐

# "The strategy for ISV's is obvious: run, don't walk, to build on the Unicenter TNG Framework."

**Paul Mason, Vice President,**
**Infrastructure Software Research, IDC**

# Thanks, IDC.

Our new Unicenter® TNG™ Framework™ has caused quite a stir.

Since we made it available for FREE to millions of clients around the world, everybody has gotten excited.

And why not? The new Unicenter® Framework™ will save developers millions of man-years in development time. It will instantly provide new applications with cross-platform support. And Unicenter® TNG™ is widely recognized as the industry standard for enterprise management.

It's easy to see why ISVs are quick to take advantage of this amazing FREE offer. To find out more, call for a copy of IDC's comprehensive report on the Unicenter TNG Framework and what it means for you.

Call right now. Like they say, "time is of the essence."

**Call 1-888-UNICENTER or visit www.cai.com**

COMPUTER® ASSOCIATES
*Software superior by design.*

**Unicenter® TNG™**

©1997 Computer Associates International, Inc., Islandia, NY 11788-7000. All other product names referenced herein are trademarks of their respective companies

# Sales force automation, users clash

▸ *Products don't address how mobile users work*

*By Kim Girard*

THE LATEST GENERATION of sales force automation tools has fallen far short of its promise to reverse the tarnished technology's reputation for failed projects and missed business opportunities. And the blame seems to lie more in the user camp than with the software itself.

Two years after reports of 61% failure rates in sales force automation projects, the jury is still out on whether a new batch of tightly integrated sales tools can do the job. The problem is strongly linked to a stubborn clash between sales force culture and the technology, many observers said. In many cases, that has created a severe disconnect between what the product is supposed to do and how the sales force chooses to use it.

**Lanier's Mike Murray says his company can no longer hire the computer-illiterate**

"The vision of what's being sold and what's being used on the streets — there's clearly a gap there," said Rob DeSisto, an analyst at Gartner Group, Inc., a Stamford, Conn.-based consultancy.

For example, the new packages are supposed to boost sales, reduce costs, build better customer relationships, cut sales cycle time and outsell competitors. But users are still complaining that the software is too hard to use, has too many fields to juggle or works as a management baby-sitting tool, or that they don't want to use it at all.

The problem is that companies too often buy cutting-edge software while giving little thought to how well it fits in with how salespeople do their jobs, DeSisto said.

Most salespeople are out of the office 80% of the time, have access to limited bandwidth when dialing in from the road and don't want to spend their time filling out forms dictated by complicated software. In many cases, those workers find that using a 3Com Corp. PalmPilot and E-mail and having limited access to a corporate intranet during the day are enough.

### LAPTOPS ARE DOORSTOPS

Software that doesn't accommodate sales issues and work styles leads to frustrated users whose "laptops become doorstops," said Dean Harrington, a consultant to and vice president of the 700-member Sales Automation Association. Located in Chicago, the group is comprised of users and vendors.

Never assume information systems understands the sales process, said Sid Lejfer, president of Success Automation Software in Waltham, Mass. Lejfer said his company recently customized a software system for 50 users at a financial firm that decided its IS staff would do the installation and training.

"They have gotten nowhere," Lejfer said. "They had a January mandate, and they still have nothing. They called back and asked us for help."

Analysts said companies that implement projects are often at fault, not the software vendor.

Typical points of failure for companies plotting sales force automation systems include the following:

- Not involving high-level executives in the project and not linking the project goals to the organization's business goals. Don't let IS lead.
- Not testing the software with users and not changing the product to fit how the sales force sells.
- Not involving marketing, customer service and the billing department in the process to try to plan an integrated system of shared information.
- Not picking a smaller yet more specialized company over the biggest vendor, and not training every employee how to use the product.

Lanier Worldwide, a Melbourne, Fla.-based office equipment supplier, hired a systems integrator before arming a 1,200-member mobile sales force with software that links salespeople to sales tips tapped from the company's call center.

Moving from paper to a computer-based system caused several employees to leave, said Mike Murray, director of national accounts. "We've changed the profile of the people we hire. Before, people didn't have to be computer-literate to sell a copier," he said.

Vendors said businesses that succeed with projects often get their top salespeople to test the chosen software — which can cost up to $3,500 per mobile user — and spread the word to colleagues.

"You get your top sales representative to use it and say, 'I used this, and it put more cash in my jeans,' " said Christopher Lochhead, an executive vice president of marketing at Vantive Corp. in Santa Clara, Calif. He also recommended that chief information officers follow a salesperson around for a day to see how they do their job. □

**MOREONLINE**

@Computerworld's Research Links to articles, reports, white papers and organizations related to sales force automation can be found at *www.computerworld.com/links/* on the "Sales force automation links" page.

& **QuickStudy explores sales force automation.**
**Page 29**

# 'Spam King' now will pay for privilege of E-mailing you

THE ASSOCIATED PRESS

**Sanford Wallace's Cyber Promotions has reached a settlement after "trespassing" on computer resources**

*By Sharon Machlis*

THE "SPAM KING" appears to be getting out of the spam business.

Sanford Wallace of Cyber Promotions, Inc., whose name has become synonymous with junk E-mail, said he will now seek permission from Internet service providers before sending bulk E-mail to their customers.

"My goal is not to piss everyone off. I'm a businessperson," Wallace said.

Perhaps. But Wallace's tactics of flooding Internet providers with unwanted E-mail made him notorious among much of the Internet community, including service providers and average 'netizens angered by the volumes of junk mail piling up in their boxes. (One anti-Wallace World Wide Web site, Spamford Darts, lets users fire computer darts at his photo.)

Wallace's strategy shift comes in the wake of a dozen lawsuits filed against his company. The latest ended in a $2 million settlement with EarthLink Network, Inc., announced last week, for "trespassing" on the Pasadena, Calif., Internet provider's computer resources. EarthLink also can collect $1 million from Wallace personally if he spams its members or uses its servers to spam others.

EarthLink trumpeted the decision in a statement with the headline "Cyber Promotions finally chokes on its own spam."

Along with the legal hassles, Wallace said high-tech attacks by irate 'netizens against whatever service provider agreed to host his company persuaded him to change methods. But he said his Dresher, Pa., company is profitable.

"Unlike every other media in the world, if you do something [considered annoying on the Internet], you could find the forces of vigilante tactics can put you out of business," Wallace said. "It's not financially or emotionally advantageous to do this kind of business."

Apex Global Internet Services in Dearborn, Mich., terminated Cyber Promotions' account in October after complaints and some hacking attacks aimed at tying up or freezing its network.

Other professional marketers said there are responsible ways to promote clients on the 'net.

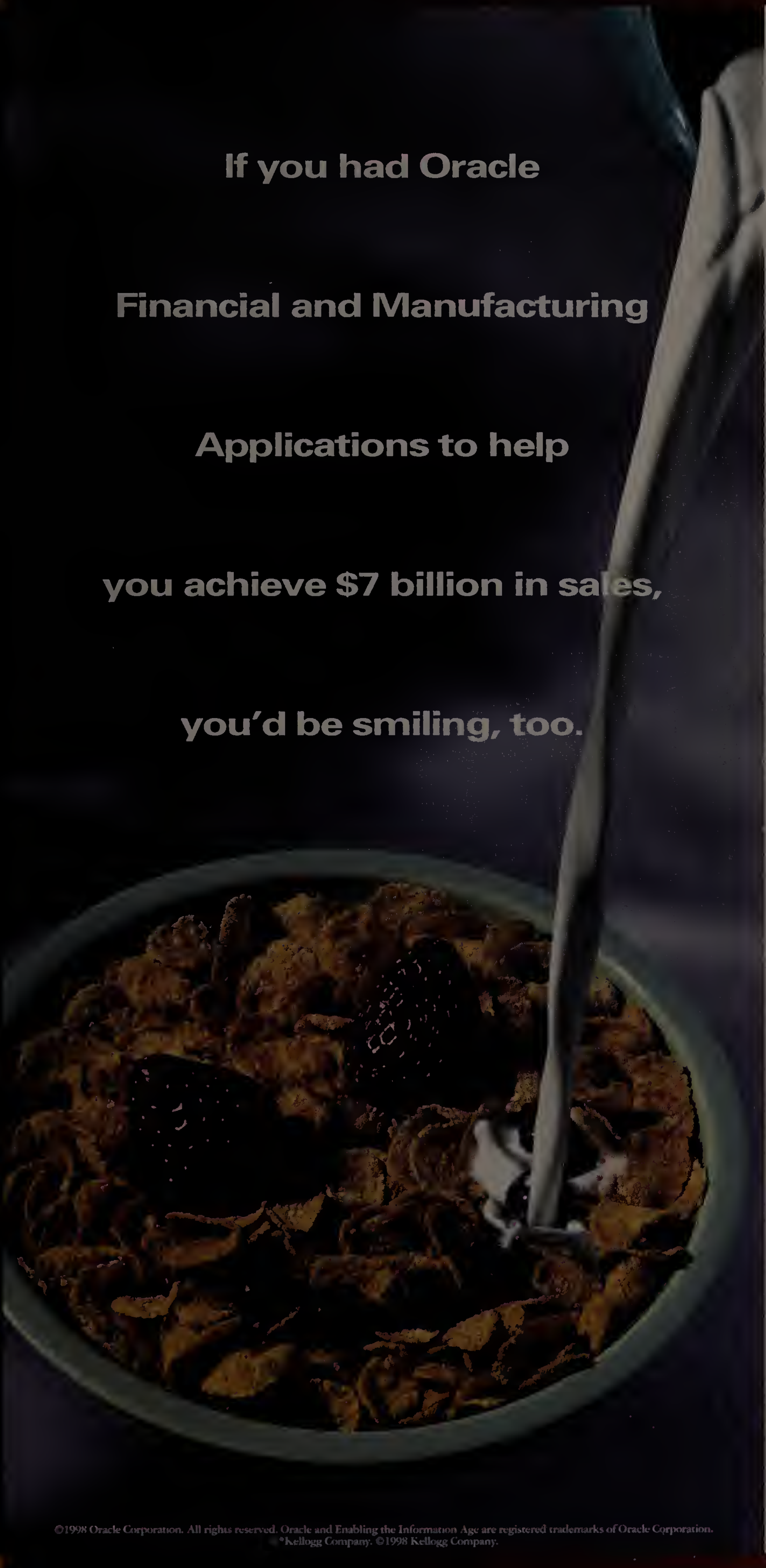
The Direct Marketing Association in New York declined to comment specifically on Wallace. But spokesman Chet Dalzell said the organization's guidelines include making it easy for consumers to opt out of receiving such E-mail — something Internet users and service providers complained was impossible with Cyber Promotions. "One of the things you will see at the top is respecting host network policies," he said.

Wallace said his latest idea is to pay Internet providers to allow his commercial E-mail to be sent to clients. That could let some service providers offer lower prices in return for getting Wallace's commercial E-mail, or perhaps two tiers of service — with spam and without.

But some major Internet providers that have been battling spam said last week they aren't interested in inviting it back, even to generate revenue. "Allowing spam in any form isn't anything we would be interested in pursuing at this time," said Gene Shimshock, vice president of marketing at Netcom On-Line Communication Services, Inc. in San Jose, Calif.

Barry Shein, president of Software Tool & Die in Brookline, Mass., was more blunt. "I'd sure as hell not help [Wallace] in any business venture," he said. "He has caused us extensive business damage, and as far I'm concerned, he belongs in prison."

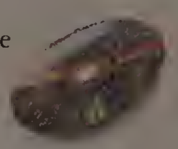
But Shein said the commercial E-mail idea might be made to work, though not necessarily profitably. And it isn't appealing coming from Wallace, he said. □



©1998 Oracle Corporation. All rights reserved. Oracle and Enabling the Information Age are registered trademarks of Oracle Corporation.
*Kellogg Company. ©1998 Kellogg Company.

**Oracle and Kellogg's®***
**satisfying customers worldwide.**

A corporation that wants to grow needs a healthy diet. And a key ingredient for Kellogg Company is a flexible Oracle solution, one that realigns and consolidates its global information system. Using a robust, integrated set of Oracle Financial and Manufacturing Applications, Kellogg is streamlining its operations worldwide, and thereby approaching $7 billion in sales. In addition to keeping a worldwide staff on top of all the latest information, Oracle decision support and data analysis tools give management a greater ability to make strategic decisions. And with the powerful Oracle database as its information management backbone, Kellogg can be assured that its systems will always be reliable, available and scalable. Kellogg is using Oracle's global solutions to seamlessly and synergistically work with suppliers, partners and customers in over 160 countries. Now the supply chain, manufacturing and financial processes are organized under strict control, positioning Kellogg at the forefront of the Consumer Packaged Goods Industry. With its best-of-breed partners, Oracle is providing superior consumer packaged goods solutions, helping companies grow locally and globally. Find out more about how Oracle can help your business grow, by visiting www.oracle.com/info/3/ or calling 1-800-633-0750, ext. 12960 for a free CD.



ORACLE®
Enabling the Information Age®

# It's a brand-new ball game as business workers fill IS jobs

*By Randy Weston and Craig Stedman*

BRAD WAGNER is a mechanical engineer. Michael Cromar is a certified public accountant. And Jim Davis is a strategic business planner.

But today, they find themselves playing the role of information systems manager.

Trek Bicycle's Brad Wagner says one-on-one teams helped to address business problems with technical solutions

MARC BERLOW

They are the new breed of IS professionals, people from the business side who land jobs directing information technology projects and balancing the often conflicting demands of technology and business needs.

For Wagner, it meant leading a product data management implementation at Trek Bicycle Corp. in Waterloo, Wis. He teamed with systems analyst Kevin Clayton, an IS professional who has an engineering background.

"I defined the business problems, [and Clayton] modeled them within the computer system," said Wagner, product engineering manager at Trek. "This allowed him to focus on technology and me to focus on solving the problems."

Wagner said by teaming to work on problems, the lines of communication were very short between what business problems needed to be solved and the technical solutions offered.

"I learned a lot about the roles of different IS people," Wagner said. "Right now, Kevin plays the role of analyst and programmer. In an ideal situation, I would have had an analyst, programmer and someone to do all the training. In reality, there was the two of us."

**When team members work near one another, they take on a single identity with a common purpose.**

Wagner is getting ready to turn over control completely to Clayton, who will continue to enhance, maintain and support the system as part of the engineering department.

According to Charles Lybrook, executive director of the Atlanta-based Information Management Forum, one of the factors for successfully managing IS projects is making sure both sides clearly understand the technical and business objectives (see chart, upper right).

"You create an environment so that everyone has respect for what the other person brings to the table," Lybrook said.

At Nibco, Inc., a recent SAP AG R/3 rollout was jointly led by two business executives and the Elkhart, Ind., manufacturer's IS director. "There was a lot of disagreement," said Jim Davis, one of the business executives. "But there was a commitment to making consensus decisions." The three regularly used facilitation techniques to settle any differences (see story, page 55).

Michael Cromar, chief financial officer at equipment leasing company GATX Capital Corp. in San Francisco, also recommends making the implementation team a separate entity to foster a sense of comradery and help tear down any walls between IS and business departments. When team members work near one another, they take on a single identity with a common purpose.

### PSEUDO-CIO

Cromar is a CPA turned pseudo-chief information officer and has spent much of his career automating the financial systems of his employers. He currently is heading up a massive implementation of R/3 at GATX, which includes rewriting much of the software to fit the unique needs of the leasing management industry.

Nearly half of the 22 members in the implementation group on GATX's project are businesspeople.

All were eventually pulled onto the project full-time while their jobs were filled with other employees.

From IS, Cromar grabbed mainly systems analysts who were already resident in business departments and who on a daily basis translated business needs into code.

He recommends staffing the team with businesspeople who are comfortable with technology and technologists who are comfortable with business issues.

"One thing I have learned in managing technology projects is certain people have an affinity for applying technology to business problems," Cromar said.

**"You create an environment so that everyone has respect for what the other person brings to the table."**
**– Charles Lybrook, Information Management Forum**

"They get satisfaction out of making technology do what they want and get a charge out of that rather than technology itself," Cromar said. □

### How to manage teams of business and IS peop

- ▶ Center discussions around business terms, not tec terms
- ▶ Focus on benefits, not technical elegance
- ▶ Treat team members as peers, regardless of individ position in the company
- ▶ Let each person understand his role, purpose and v concerning the project
- ▶ Understand one another's needs in preliminary meet
  - – Explain the technical issues to the business mem
  - – Explain the business issues to the technical mem
- ▶ Have team members work near one another
- ▶ Find any excuse to hold a joint celebration

Source: The Information Management Forum, Atlanta

## A different type of project requires a different type of worker

Staffing intradepartmental projects isn't always easy.

After studying SAP R/3 and what the critical success factors were with enterprise resource planning (ERP) systems in general, it became clear to GATX CFO Michael Cromar that the degree of integration and depth of the software required a different type of staffing.

"I had to convince management we needed to pull people from the business side to make it work," Cromar said.

The business users pulled included the director of taxation, two of the highest level portfolio management directors, the manager of financial reporting, an accounting manager and a lease contract administrator.

Half of those people will now stay in IS, supporting the new system and helping with the rollout of additional R/3 modules.

Similarly, 20 of the 27 employees who worked on Nibco's R/3 rollout came from the business side of the manufacturer. And two members of a three-person team that jointly managed the project were business executives.

The 20 businesspeople were assigned to the R/3 project full-time for more than a year and moved to a separate office area along with their IS cohorts.

Several of them have remained on a smaller 11-member team that is doing R/3-related support work, even though that group is now part of the company's IS department.

It doesn't hurt to have a little old-fashioned clout when trying to staff up.

Gene Elmore's last job at Lockheed Martin Corp. was managing the development and manufacture of the company's new F-22 Raptor fighter plane. But six months ago, he was tapped by the president of Lockheed Martin's Aeronautics Sector to head up a $100 million R/3 implementation and business re-engineering project.

Elmore, who is now vice president of ERP at the Bethesda, Md., division and reports directly to the president, said he was given the authority to be a "visionary with power."

He surrounded an IT infrastructure group working on the R/3 project with eight other groups focused on business issues and then made sure the business managers called all the shots.

"We love IS, but they're just part of the team," Elmore said. "They don't decide anything about the [business] process changes. They're into implementation."

— Randy Weston
and Craig Stedman

## Correction

*Computerworld*'s March 23 QuickStudy incorrectly stated the maximum transfer rates for Fibre Channel and SCSI storage connections. The transfer rates are 100M byte/sec. for Fibre Channel and 40M byte/sec. for SCSI.

MCI.
Superior data network performance.
Proactive monitoring.
Service level agreements.
One less wrinkle in your forehead.

[illegible] critical, we're doing a few things to make it a lot less worrisome. [illegible] network available. We're deploying SONET technology throughout our [illegible]

[illegible] our network. So we can often fix a problem before it ever becomes your [illegible] know about it ahead of time and have you up and running in no time.

[illegible] like latency, data delivery and network availability. [illegible] objectives and outlining exactly how we'll report, monitor and [illegible] covering Frame Relay, Internet, SONET Private Line and ATM, [illegible]

[illegible] help you and your company. After all, what's there to lose. [illegible]

[illegible] for complete details. © 1998 MCI Telecommunications Corporation. All rights reserved.

Local · Global · Data · Conferencing
Internet · Paging · Integrated Messaging
Cellular · Call Center Services

MCI

# Sun and IBM team up to offer JavaOS

▸ *Vendors will introduce network computer software within months, but give no details*

*By Jaikumar Vijayan and April Jacobs*

FOR A MOVE that was touted as the harbinger of a new industry standard for network computing, last week's joint announcement by Sun Microsystems, Inc. and IBM was short on some crucial details.

The companies said they are collaborating to deliver JavaOS for Business, a new operating system optimized for Java-based network computing. Systems using the operating system will be available early next year, the companies said.

The partnership could potentially foster a standard, widely accepted Java software development environment for users and vendors, analysts said. But the near-term affect on users is unclear because both companies refused to reveal product specifics.

For instance, there was no information about what functional, performance and security enhancements the new Java will have over existing network computing operating systems from IBM and Sun.

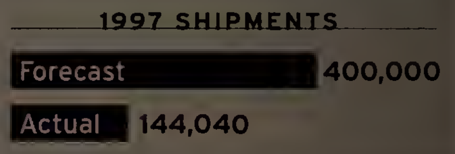
Company officials also refused to comment on what kind of kernel the new operating system will be built on or the hardware requirements to run it.

Analysts said those are important issues because Java has taken some public lumps recently for its performance and speed problems.

"The emphasis last week was on the new partnership strategy maybe because that is what they wanted people to focus on," said Amy Wohl, president of Wohl Associates, a Narberth, Pa.-based consultancy. "But it would have been good if they were more specific on what exactly this new JavaOS will mean" for users.

**NCs FALL SHORT**

Late market appearance, plummeting PC prices and the emergence of Windows-based terminals led to fewer-than-expected shipments of network computers



Source: Dataquest, San Jose, Calif.

Sun and IBM have been leading advocates for using network computers in corporations, a movement that has slowed somewhat recently as PCs have become cheaper and easier to manage.

One result is that network computer sales have been slower than predicted (see chart).

By teaming up, IBM and Sun hope to boost interest in the nascent market and present a solid alternative to thin clients running Microsoft Corp.'s Windows CE.

"IBM certainly increases Java's circle of influence," said Kevin Perry, producer of author Tom Clancy's online company Red Storm Entertainment, Inc. in Morrisville, N.C. "If it works, the alliance could give the critical mass needed for Java" to grow on the desktop.

Under terms of last week's agreement, IBM and Sun will jointly develop and co-market JavaOS to computer and component manufacturers, software vendors, channel integrators and large customers.

The companies expect to make the software available to developers later this year. The software is being targeted for use in thin clients, such as network computers, and in remote terminals including kiosks and ticket machines.

IBM will introduce the software on its Network Station 1000 line of network computers early next year. ☐

If you
stay there
one more year,
you'll be
just like
them.

You were hired for your fresh ideas. Then came the pressure to fit in. Lately, you've been doing things their way. Pretty soon, you won't be able to tell the difference.

Strike a nerve? Then contact Deloitte & Touche Consulting Group/ICS today. If you have two or more years of experience in SAP or Baan implementation, you can join a company that rewards individual talent and initiative. Our compensation package is among the best in the industry, and we're known for an enlightened (and looser) environment where a satisfying career is the rule, not the exception.

Call our Recruiting Hotline, 1-800-481-0551, or apply in confidence via our website: www.deloitte-ics.com.

You won't regret it.

**Deloitte & Touche Consulting Group**
**ICS**

All trademarks are property of their respective owners. An equal opportunity employer

**Please join us for an informative seminar at a location near you:**

These will be IT Managers and Specialists Briefings. The morning sessions will focus on our SmartSolution for MQSeries and the afternoon sessions will focus on *PerformanceWorks* SmartWatch, our application performance management solution.

To register, visit our website at www.landmark.com or call us at 1-703-902-8000.

| | |
|---|---|
| Washington, DC | April 2 |
| Boston, MA | April 7 |
| San Francisco, CA | April 7 |
| Philadelphia, PA | April 8 |
| Anaheim, CA | April 8 |
| Pittsburgh, PA | April 9 |
| Dallas, TX | April 9 |
| Cleveland, OH | April 14 |
| Atlanta, GA | April 15 |
| New York City, NY | April 16 |
| Toronto, Canada | April 16 |
| Kansas City, MO | April 21 |
| Phoenix, AZ | April 21 |
| St. Louis, MO | April 22 |
| Minneapolis, MN | April 22 |
| Chicago, IL | April 23 |
| Detroit, MI | April 23 |

# Focused on Performance of MQSeries

To keep your eyes on MQSeries performance, you need *PerformanceWorks*™ **The Monitor®** for MQSeries. TMON for MQSeries helps you detect performance problems quickly to keep applications running at their peak.

TMON for MQSeries provides complete performance monitoring for IBM's MQSeries messaging middleware. It makes managing MQSeries performance easier by:

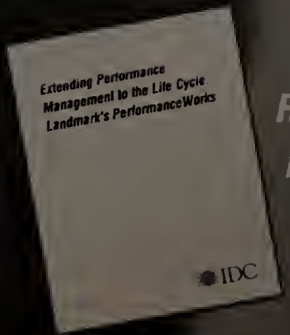
- providing the real-time, recent-past, and historical performance information necessary for tuning performance and identify problems;
- collecting and analyzing MQ performance data from a single point across multiple platforms;
- monitoring all aspects of your MQSeries environment and immediately informing you when problems occur.

When you're intent on solving the MQSeries performance challenges facing your business, only one solution comes into focus – *PerformanceWorks* The Monitor for MQSeries.

LANDMARK®

*Focused on Performance*

**Tel: 1-703-902-8000 Fax: 1-703-893-5568**
**Sales: 1-800-333-8666**
**Email: info@landmark.com**
**www.landmark.com**



Extending Performance Management to the Life Cycle Landmark's PerformanceWorks

IDC

*Read what IDC analyst Paul Mason has to say about System Management Software. Contact Landmark for your FREE copy.*

## FRANKLY SPEAKING

# The IRS's doomed cure-all

FRANK HAYES

CAN THE IRS REALLY fix its IT problems with one big $8 billion, 15-year project?

Nope. Not even with all the forms, schedules, attachments and additional instructions it can muster. Because even the IRS isn't exempt from a fundamental IT reality: Big projects fail.

The IRS is in trouble. Leave aside the fact that the public hates it and it's every politician's favorite whipping boy.

The IRS's systems and IS work are simply catastrophes. The agency failed its own audit in 1995. It misses up to $50 billion in revenue every year because of its antiquated systems. And it has blown $2.5 billion on failed IT modernization efforts since 1990.

The IRS — and taxpayers — can't afford another failure.

Last month, new IRS Commissioner Charles Rossotti launched a complete overhaul of the agency's systems. It can't work. It's doomed to failure.

*Any* 15-year IT project is doomed to failure. No matter how good the intentions, no matter how talented the people.

**A 15-year, $8 billion project? It's a Titanic with at least three icebergs in its path.**

It's not just that it's too large to manage. It's that reality won't stand still.

Imagine it's 1983, and you're trying to map out the next 15 years of technology for your company. You don't know that in 15 years PCs will be everywhere, in businesses and homes. You don't know about the coming rise of LANs or Windows. You've got no clue about the tidal wave of the Internet.

What sort of 15-year plan could *you* come up with? Whatever it might be, that road map wouldn't bear much resemblance to the IT reality of the past decade and a half.

Every four or five years, we've had to adjust to another technology shift — first PCs, then LANs, GUIs and the Internet. Each shift has forced us to rethink our systems and direction.

What shifts will come next? We can't know. But we know they'll come every four years or so.

In that zigzagging IT reality, a successful five-year project is still possible. With luck, you'll hit only one major shift during the course of it.

But a 15-year project? Forget it. It's doomed to failure in a future that's impossible to predict. It's a *Titanic* with at least three colossal icebergs in its path.

So what's the IRS to do? Smash that 15-year project into a million pieces.

That means building a backbone to flesh out "core systems." It means splitting processes into simple pieces instead of bundling them together into complex chunks. It means designing every part of the system so it can be replaced within six months.

Breaking the technology into little pieces makes it possible to break the project into manageable fragments, too. More important, it lets developers change direction when technology changes. Or business needs change. Or political mandates change.

And change they will. The week after the IRS launched the project, the Senate Finance Committee unanimously approved a slew of new requirements for the IRS. That's bound to happen a lot over the next 15 years.

Rossotti used to run American Management Systems, the huge IT consultancy. He's overseen lots of big jobs. But for the biggest project of his career, he'd better be thinking small, or he — and the rest of us — will be paying for it for a lot of April 15ths to come. ☐

---

*Hayes is* Computerworld*'s staff columnist. His Internet address is frank_hayes @cw.com.*

## SHORTS

### Exec: Compaq to fold in DEC

Although it refused to comment further, Digital Equipment Corp. didn't dispute published reports last week that Compaq Computer Corp. may abandon plans to run Digital as a wholly owned subsidiary. Instead, Digital probably will be fully integrated with Compaq. That will make the acquisition work more efficiently and eliminate overlapping positions in the two companies, according to the reports, which quoted Digital Senior Vice President Harry Copperman. Observers said such a move would streamline management for the combined company and increase the likelihood of major layoffs at Digital.

### Senate committees OK visas . . .

By a 12-6 vote, the U.S. Senate Judiciary Committee last week approved a bill that could raise the bar on the number of visas for foreign information technology workers in the U.S. Now going to the full Senate, the American Competitiveness Act would raise the annual limit of workers from 65,000 to 95,000 for the next five years. A similar measure is in the House.

### . . . deny bid to delay IRS bill

The U.S. Senate Finance Committee last week ignored requests by the Internal Revenue Service and U.S. Department of the Treasury to delay the effective date for the IRS restructuring bill until Jan. 31, 2000, so that they could focus on fixing their year 2000 problems. The committee unanimously approved the massive restructuring. The House has passed a measure similar to the one now going before the full Senate.

### Microsoft hits Y2K delay

Microsoft Corp. was supposed to put a year 2000 resource center online by mid-March [CW, Jan. 26], but it has pushed that date back until late this month, a spokesman said. The resource center *(www.microsoft.com/year2000)* will list information about Microsoft products that are year 2000-compliant and describe how the products handle dates, how to work around problems and what tools are available to help fix products.

### Netscape releases code

Netscape Communications Corp. last week released the source code for its Communicator 5.0 browser/groupware client with support for the Extensible Markup Language, the recently announced Open Java Virtual Machine interface and new browsing tools. Netscape estimated that 47,000 people downloaded the code from its *www.mozilla.org* site by the end of Wednesday. It hopes to spur developers to enhance Communicator.

### NCR gives away Teradata

NCR Corp. last week said it will give away its Teradata decision-support database to users who trade in rival products through June 30. The Dayton, Ohio, company also is offering free consultation on converting to Teradata as part of the trade-in offer. The free Teradata licenses would cover configurations equal to a user's current database installation up to a four-node server.

### Latest Windows CE on tap

Users will get a chance to peek at Microsoft Corp.'s Windows CE 2.1, the latest version of the vendor's operating system for handhelds and other mobile computers, at this week's Microsoft CE Developers Conference in San Jose, Calif. Windows CE 2.1 will be used by manufacturers that are developing Jupiter subnotebooks. Version 2.1 includes support for Universal Serial Bus, IP multicast, Ethernet, encryption capabilities and network printing. Microsoft also is targeting the operating system for personal devices, embedded systems, entertainment and consumer products.

### AT&T expands ops center

AT&T Corp. last week broke ground for a $91 million Network Operations Center in Bedford, N.J., that will be three times the size of the current facility there. The existing center was built in 1986, when AT&T handled 33 million calls on an average business day. Today, the company handles 250 million calls on a typical weekday. Voice traffic is growing at 9% per year, but data traffic is growing more than 100% per year, AT&T said. The new center will open next year.

### Network computer misses hype

Worldwide shipments of network computers were below expectations last year and will be sluggish until 2001, according to Dataquest in San Jose, Calif. In 1997, 144,040 network computers were shipped; another 482,196 are expected to ship this year worldwide. Factors causing the market to suffer included late product shipments, "fading interest from key parties, plummeting PC prices, and the expected emergence of Windows terminals," according to Dataquest.

**SHORT TAKES** David W. Howard, 47, has been named senior vice president of MIS at **Zale Corp.**, a Dallas-based jeweler. He succeeds Paul Kanneman, 39, who is returning to consulting. . . . Digital Equipment Corp. Switzerland last week announced a three-year, $50 million outsourcing contract with **Asea Brown Boveri**, a $35 billion construction company in Baden, Switzerland, to manage the latter's IT operations, including its SAP AG R/3 and Notes systems. . . . Shareholders approved **Artecon Inc.'s** $31.7 million purchase of Milpitas, Calif.-based **Storage Dimensions, Inc.** Artecon is an open-systems storage vendor.

*A network computer that's* flexible *enough to be a* Net PC *and a* Managed PC? *What else would you expect from the world's* ***3rd largest*** *PC manufacturer?*

**ACER**

Why decide between a fully-featured PC and a thin client when there's a network computer that's flexible enough to be both. The AcerPower™ FlexT4000™. It's the only solution that lets you convert a sealed Net PC to a Managed PC with a 32X (max.) CD-ROM or floppy drive. Or vice versa. Plus, it makes administration easy with advanced manageability features. And, AcerPower FlexT4000 models start at just **$767***. What else would you expect from the world's 3rd largest PC manufacturer?**

***AcerPower FlexT4000***

- *Unbeatable price/performance capabilities and flexibility*
- *Advanced manageability features: DMI 2.0 compliant, Wake-on-LAN and Intel LANDesk® Client Manager 3.1*
- *Powered by a 166MHz, 200MHz, or 233MHz Intel® Pentium® processor with MMX™ technology*
- *Small footprint convertible chassis*
- *Integrated audio, video and 10/100 Ethernet*

MMX intel inside pentium® processor

*Call Acer at 1-800-733-ACER*
*& select option 2*
*www.acer.com/info/flexpc/*

**"The Top 10 PC Manufacturers Worldwide List: A Verifiable Compilation," by IDC Consulting, November, 1997. ©1998 Acer America Corporation. Acer and the Acer logo are registered trademarks, and AcerPower and FlexT4000 are trademarks of Acer America Corporation and Acer, Inc. Intel, the Intel Inside logo, Pentium, and LANDesk are registered trademarks, and MMX is a trademark, of Intel Corporation. All other company and/or product names are the property of their respective trademark owners. *Estimated street price for the AcerPower FlexT4000, excluding all applicable taxes. Dealer price may vary.

# Taking automated road to market

▸ *Software users look to track sales prospects, customer data requests*

*By Sharon Machlis*

MARKETING DEPARTMENTS are about to be wooed by a host of companies promising to do for them what already has been done on the sales side: automate their activities to boost the bottom line.

"I think there can be a large impact," said Scott Nelson, an analyst at Gartner Group, Inc. in Stamford, Conn. He predicts six to nine new products will come to market during the next five months. "Marketing processes at most firms haven't changed since World War II," he said.

**Marketing automation software can:**

- Track customer information requests and purchases
- Respond to requests automatically
- Evaluate what marketing programs generate the most sales
- Create automated campaigns
- Better qualify and route leads for the sales force

The new marketing automation software responds to and tracks customer information requests, determines when an early lead is a qualified sales prospect and evaluates which marketing programs are most effective in generating sales.

Beta testers said they are pleased with results so far, although implementation in most cases is still in the early stages.

N.E.T., a Redwood City, Calif., networking company, plans to use software from Rubric, Inc. in San Mateo, Calif., to boost marketing efficiency and better track and qualify customer leads for the sales force.

The ultimate goal is to make sure "we never lose a contact," said Maria Fey, manager of marketing communications. "So far, it's been easy to use, intuitive," she said.

Next Monday, Rubric plans to formally unveil its EMA 1.0 Java-based "enterprise marketing automation" package, which will sell for $150,000 to $220,000.

A user at a major U.S. bank who asked not to be identified said she has been beta-testing the Rubric software for event management. So far, the software is reducing the time needed to send invitations and track which customers respond to which kinds of events, she said. "When it really becomes valuable is over the course of time," when she will have a database with customer preferences, she said.

"I think it's a tool that a lot of people have probably been waiting for," said Cynthia Hall, marketing programs manager at Junglee Corp., an Internet database company in Sunnyvale, Calif., who has used software from MarketFirst Software in Santa Clara, Calif. She expects MarketFirst to help create more targeted marketing programs that will "ultimately result in better return on investment."

As these products come to market, Nelson said, some companies may find that integrating marketing software into existing World Wide Web, sales and other applications is "not a trivial matter." He also warned that companies must be ready to examine and revamp practices before computerizing them. "If you take a bad process and automate it, all you have is an automated bad process," he said. "You're going to see a lot of that."

An alternate approach to specific marketing automation products comes from products that generate reports and analysis from enterprise resource management software such as SAP AG's R/3. Visio Corp. in Seattle, a maker of drawing and diagram software, already uses a product from Epiphany in Mountain View, Calif., to track marketing spending, according to Chief Information Officer Neal Myrick. He plans to hook it up to the firm's Onyx Software Corp. customer database.

"Now we can track an individual [customer] in Onyx, but that requires a person to have an Onyx license on their desktop and know how to use Onyx," Myrick said. Once the Epiphany application is tied to Onyx, he said, "users can just hop on the intranet." ☐

**A sampling of marketing automation suppliers**

| | Location | URL | Product | Price |
|---|---|---|---|---|
| **Rubric, Inc.** | San Mateo, Calif. | *www.rubricsoft.com* | EMA 1.0 | $150,000 to $250,000 |
| **MarketFirst Software** | Santa Clara, Calif. | *www.marketfirst.com* | MarketFirst 1.0 | Starts at $195,000 |
| **DataMind Corp.** | San Mateo, Calif. | *www.datamindcorp.com* | MarketOne | Starts at $200,000 |

# Software snafu fools Chicago trading system

*By Thomas Hoffman*

A SOFTWARE GLITCH that halted futures trading at the Chicago Board of Trade (CBOT) for 45 minutes on April Fool's Day was no joke — at least not for bond and options traders.

The glitch stopped a market price reporting system from sending futures prices from CBOT's trading floor to outside brokers Wednesday morning. The software, which runs on a Tandem Computers, Inc. machine, "locked up," forcing CBOT programmers to enter the system and reset the data, according to a CBOT spokesman.

The system snafu prevented CBOT's grain contract trading from opening on time (10:30 EST). It also shut down treasury contract trading until the problem was fixed at 11:15 EST.

The CBOT spokesman said he couldn't say whether the shutdown resulted in any significant losses.

Dennis Hynes, a bond trader at New York investment bank R. W. Pressprich & Co., said the disruption didn't cause any trading firms significant losses because the glitch occurred on a quiet trading day after most traders had already mapped out their trading strategies. ☐

---

# California powers up nation's first virtual exchange for utilities

*By Matt Hamblen*

AFTER A THREE-MONTH DELAY, California last week launched the nation's first virtual exchange designed to trade deregulated electric power as a commodity.

Modeled after the Nasdaq Stock Market's trading system, the California exchange uses a private Asynchronous Transfer Mode (ATM) network built and managed by MCI Communications Corp. in Washington as part of a $180 million, six-year outsourcing contract awarded last year.

### OUTSOURCING WAS GOAL

Wholesale bidding for kilowatt hours from suppliers as far away as Canada and Texas began on the network Tuesday without any actual trading floor. The system is similar to the virtual trading floor that MCI operates for the Nasdaq stock market, officials said.

Outsourcing the network was the objective of the energy trading system's originators because time was of the essence. And the California Independent System Operator's principal mission was to enable power deregulation, not to become a telecommunications carrier.

"It would have been difficult, if not impossible, to build such a complex network in the time we had," said Dennis Fishback, chief information officer at the California Independent System Operator in Fulsom, Calif.

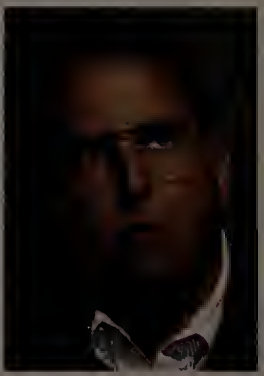
Finding staff to run the network also would have been difficult, he said.

Fishback's agency, along with the California Power Exchange Corp., a state-charted nonprofit organization in Alhambra, Calif., awarded the outsourcing deal to MCI.

The ATM network uses an OC-12 backbone with 11 points of presence for buyers and sellers to connect using private lines, frame relay, Integrated Services Digital Network or analog dial-up, MCI officials said.

The system was designed for up to 2,000 simultaneous users, but it has attracted only 200 so far, Fishback said.

Explaining the start-up delay, Fishback said, "We simply ran out of time to get everything done. The systems were all built, and we hadn't worked out all the integration points as well as all the procedures."


PATRICK DRYDEN

**California Independent System Operator's Dennis Fishback: "It would have been difficult, if not impossible, to build such a complex network in the time we had"**

MCI's network was ready in mid-December, in fact, company officials said.

### TESTING

In the past 90 days, network operators ran approximately 90 trading simulations, nearly one per day, to test the system, said George Sladoje, chief operating officer at the Power Exchange.

The delay meant that the exchange's organizers lost $27 million in potential revenue they could have collected from power grid management charges in the past three months, officials said.

As for whether the exchange is lowering energy costs, it is too soon to tell, Sladoje said. "But there's no question the technology is making this exchange happen," he said.

It will be hard to evaluate the exchange's impact on energy prices, partly because the exchange sets only wholesale prices and partly because only 25% of an average electricity bill includes the retail cost of energy.

The other 75% of the bill includes costs such as transport of power to a business or home, he said. ☐

# AGILE POWER

## MILLENNIUM 700 SERIES.

CMOS SERVERS THAT OUTRUN EVERY ECL SYSTEM IN SPEED AND POWER.

- Millennium™ 700 Series Global Servers deliver today's highest levels of S/390® CMOS power, predictability, and availability.
- Extremely flexible features and configurations – up to 12 CPUs producing 686 MIPS while consuming remarkably little space, heat, and cost.
- Born and bred to run the most mission-critical applications.
- Need S/390 processing power in the biggest way? Talk to Amdahl.

AMDAHL® BIG COMPUTING™

(800) 223-2215 ext. cw9 or www.amdahl.com/cw

©1998, Amdahl Corporation. Amdahl is a registered trademark and the Amdahl infinity log
tered trademark of IBM Corporation. All other company names and trademarks or registere

# EDI users: Nothing but 'net

▸ *Many open up to Internet transactions; standards issues surface*

*By Carol Sliwa*
ORLANDO, FLA.

THE QUESTION is no longer if companies doing traditional electronic data interchange (EDI) will flock to the Internet to link with trading partners.

EDI users at last week's Data Interchange Standards Association (DISA) conference here are already conducting transactions over the Internet, are on the verge of doing so or are plotting strategies for future projects. The issues they face include the following:

- Choosing data formats and standards for exchanging purchase order, invoice and other data among companies. The formats and standards may include the current American National Standards Institute's X12; the emerging Open Buying on the Internet (OBI) standards, which combine World Wide Web and legacy technology; or the Extensible Markup Language (XML) for encoding data in a structured format to transmit it over the Internet.
- Exchanging data with smaller, non-EDI-enabled trading partners, while making sure the data interfaces with back-end legacy systems.

"I don't think anybody's figured out what the best method is yet," said John Ling, an electronic-commerce coordinator at Alabama Power, a Birmingham-based subsidiary of the Southern Co.

Security was once the primary and overriding fear. But it finally appears to be a lesser concern among EDI users, who have noted improvements in authentication, digital certificate and Secure Sockets Layer encryption technology.

### Benefits of Internet-based procurement:

- ▸ Reach more trading partners
- ▸ Reduce paper, telephone and fax costs
- ▸ Reduce data-entry errors
- ▸ Free up employees

"Two years ago, the security was not there," said William Zirkel, a systems integration specialist in EDI services at Northrop Grumman Corp. in Bethpage, N.Y.

"Today, with banks and investment companies using the Internet, I feel it's secure enough that we can bring it out where it's viable for cost savings," Zirkel said.

**ATTRACTING OBI SUPPORT**

For Johnson & Johnson, the more pressing issue is getting other companies on board with the OBI standards for procuring nonstrategic items, such as office supplies, through a combination of Web and legacy technology.

Edwin Tsuzuki, director of strategic sourcing at the New Brunswick, N.J.-based company, said OBI would be particularly helpful for his company with low-dollar, high-volume transactions.

About 40 companies belong to the OBI consortium, but unless more follow suit, Johnson & Johnson will find itself in a tough spot.

Many DISA attendees said they didn't know much about OBI. Those few who are familiar with it either found it too complicated or had more pressing concerns.

**NO HUMANS NEEDED**

Michael Fleck, a project leader in information systems at United Guaranty Corp. in Greensboro, N.C., wants to help his budget-conscious and technically challenged trading partners engage in true computer-to-computer EDI transactions, where no human intervention is needed.

That would differ from the approach taken by some early EDI-over-the-Internet adopters that post EDI-compatible order and billing forms on the Web; their smaller partners merely gain the convenience of filling them out online at any time of day.

The information isn't automatically transferred to their accounting systems. But Fleck is researching XML as a possible way to make that happen. "Hopefully, that will get them away from the rip-and-read EDI," he said.

Weyerhaeuser Co. in Federal Way, Wash., is checking out inexpensive, proprietary software that smaller partners might use to that end.

The notion that any standard can serve as a panacea sounds far-fetched to Tony Piwowarski, North American disbursement systems manager at Weyerhaeuser in Tacoma, Wash.

"Even with EDI, we find ourselves resolving mapping differences with each trading partner," Piwowarski said. He noted that partners tend to want some unique elements incorporated into transactions. ☐

## High hopes for XML

**Extensible Markup Language (XML), the hot Web technology of the moment, holds promise for everything from personal investment management to help desk problems and more accurate online searching.**

**Attendees at last week's Data Interchange Standards Association Conference described XML as promising new technology for EDI over the Internet. XML makes information in Web pages easier to find and index by assigning the information to specific categories via document tags.**

**For example, bank managers at United Guaranty Corp. in Greensboro, N.C., said they hope to use XML to exchange mortgage insurance information with non-EDI-enabled business partners, from database to database, without human intervention.**

**Using traditional EDI, translation software is needed to define the structure of data in standard EDI documents. And the data must be mapped to the business applications that process it. Value-added networks typically provide those translation and mapping services, but they can be expensive.**

**XML could reduce those expenses and the labor costs inherent with handling EDI documents, says Rik Drummond, president of the Drummond Group, a consultancy in Fort Worth, Texas.**

**But not everyone is convinced of XML's powers.**

**XML can be used to format data, but it won't help establish the meaning of a particular piece of data in relation to a business process, said Rachel Foerster, principal at Rachel Foerster & Associates, an EDI/electronic-commerce consultancy in Beach Park, Ill.**

**Drummond, on the other hand, said XML data could be defined through similar mechanisms to those used in defining EDI documents.**

**— Carol Sliwa**

---

# Intel's Mobile chip strains batteries

*By Kim Girard*
SANTA CLARA, CALIF.

INTEL CORP.'s Pentium II Mobile processor promises a 10% increase in notebook performance. But there is a trade-off: about 15 fewer minutes of battery life, a drop of 10% or more.

The battery drain comes despite the work Intel has done to fit a bulky Pentium II into a notebook form factor.

The Pentium II Mobile, in addition to its smaller-than-PC size, runs at lower voltage and features circuits that consume less power and produce less heat.

Here is an example of the problem: Battery life of the Gateway 2000, Inc. Solo 9100 notebook with a 266-MHz Pentium MMX processor will dip from 3 hours and 45 minutes to 3 hours and 10 minutes on a 266-MHz Pentium II laptop. Compaq Computer Corp. said it expects the two-hour-plus battery life on its Armada 7800 to be shortened by about 15 minutes. Dell Computer Corp. said the battery life of its Latitude will drop from 3 hours and 53 minutes to 3 hours and 18 minutes. Customers are telling vendors that they are willing to sacrifice a few minutes of battery life for better performance. But some users said the new machines will only make a stubborn problem worse.

**NEW LAPTOPS WITH PENTIUM II MOBILE CHIPS ON TAP**

| Vendor/model | Price | Availability | Goodies |
|---|---|---|---|
| Dell Latitude CP | $3,500 for 266-MHz;<br>$2,999 for 233-MHz | This month | Express charge: one-hour battery recharge |
| IBM ThinkPad 380, 600 and 770 | Less than $3,000 to $6,000 | April 28 | ThinkPad 600 weighs 4.6-lbs. and is 1.3 in. wide |
| Compaq Armada 7800 | $5,399 for 266-MHz with Windows 95;<br>$5,499 with Windows NT | Next month | Accelerated Graphics Port with 66-MHz graphics bus |
| Toshiba Satellite Pro 490; Tecra 780 | $3,500 for Satellite Pro;<br>$5,099 for Tecra 780 | This month | Tecra 780 has a 5.1G-byte hard drive, MPEG-2 hardware decoding and VideoBrush scanning software |

"Battery life is so horrendous in general" that 10 or 15 minutes may not seem to mean that much, said Alex Hu, a senior technology officer at The Chase Manhattan Bank Corp. in New York. But Hu said the bank's IBM ThinkPad users are clamoring for at least an hour more of battery life. Even more important than battery life or processor speed are weight and price, he said.

The price factor could be key to the success of the Pentium II rollout, analysts said. The price of some Pentium II Mobile notebooks will dip below $3,000, but most will cost between $3,000 and $4,000, analysts said.

Some observers said lower prices could release some users' pent-up demand for laptop upgrades. But others said users will wait to upgrade to Windows 98 or Windows NT 5.0. ☐

New Subscriber Savings!

COVER PRICE

~~$4.00~~ an issue

YOU PAY

78¢ an issue

**YES!** Send me 1 year (51 issues) of COMPUTERWORLD for only $39.95* – just 78¢ an issue!

First Name MI Last Name

Title Company

Address E-mail address

City State Zip

Single copy price: $4.00/issue *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295.
Foreign orders must be prepaid in U.S. dollars. Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew B2D8 &

**COMPUTERWORLD**

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

DEFINITY® re-defined

How do you combine a voice network, a data network, and a video network into one network? DEFINITY ATM Networking from Lucent Technologies. Helps reduce management costs by integrating your existing networks, including ATM. You can even install DEFINITY ATM without retraining users. A solution flexible enough to adapt as the needs of your network change.

**Lucent Technologies**
**Bell Labs Innovations**
211 Mt. Airy Road
Basking Ridge, NJ 07920
www.lucent.com/enterprise
1-800-221-1223 ext.356

We make the things that make communications work.℠

© 1998 Lucent Technologies

**YOUR FAR-FLUNG EMPIRE:**

Your operation covers 60 countries.

10 languages.

49 currencies.

6 time zones.

4967 separate trade regulations.

**GATHERED TOGETHER:**

PeopleSoft enterprise software. ◄······

© 1999 PeopleSoft, Inc. PeopleSoft and the PeopleSoft logo are registered trademarks of PeopleSoft, Inc.

The key to managing a global organization is to make it seem less, well, global. Our enterprise software–from HR and Financials to Supply Chain Management and Manufacturing–is flexible, comprehensive, and designed around your world. Not ours. To find out what we can do for you, call 888-773-8277 or visit www.peoplesoft.com.

PEOPLESOFT®

WE WORK IN YOUR WORLD.

# SGI faces loss, serious loss

▸ *But analysts say it's still a viable competitor*

*By Jaikumar Vijayan*

SILICON GRAPHICS, INC., the once high-flying workstation and server vendor, said it expects to post a "significant net loss" for its fiscal third quarter — an announcement that caused barely a ripple.

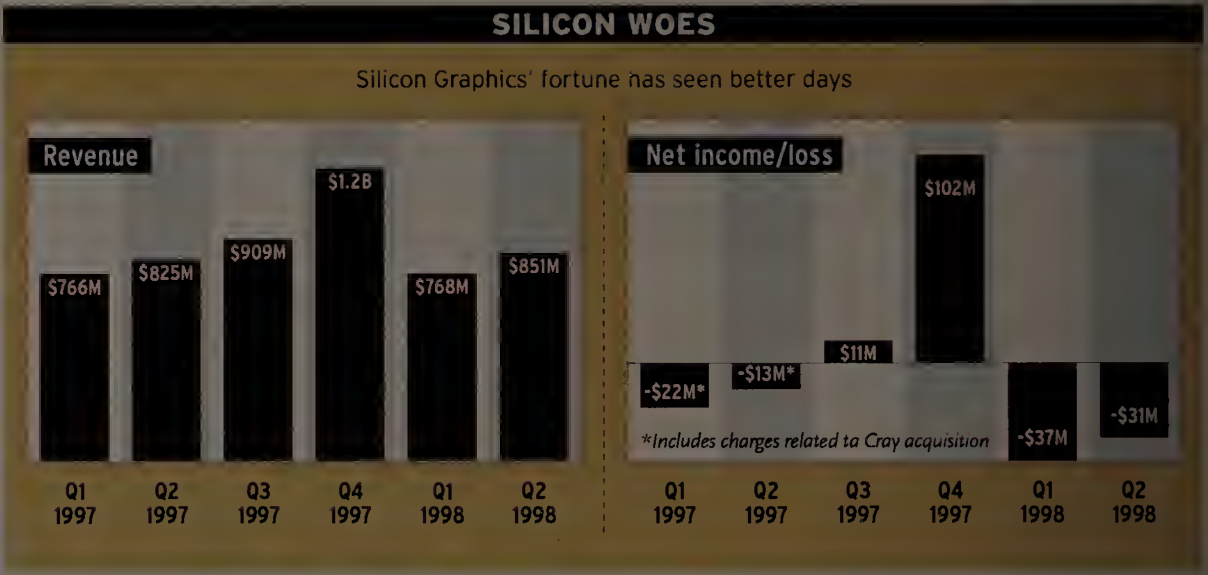
Instead, analysts said the warning was expected from a company that has been struggling to meet profit and product shipment forecasts for the past 18 months.

**SGI has been struggling to meet profit and product shipment forecasts for the past 18 months.**

SGI's travails could give some prospective users pause before they make major systems investments, analysts said. But current users shouldn't worry about potential service or support problems.

Many things have tripped up the Mountain View, Calif., company during the past few quarters, including manufacturing delays; pressure on its core workstations from inexpensive Windows NT boxes; a costly acquisition of Cray Research, Inc.; a change of CEOs; and layoffs [CW, Nov. 3, 1997].

"I'm not terribly surprised," said Greg Weiss, an analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y. "Their product line is pretty uncompetitive right now [on price], and I am not sure their operations are as cost-competitive as [they need] to be."


SILICON WOES

Silicon Graphics' fortune has seen better days

*Includes charges related to Cray acquisition

That doesn't spell the start of an SGI deathwatch, however, said Chris Willard, an analyst at International Data Corp. in Framingham, Mass.

"There isn't anything so fundamentally wrong to say this company won't make it. Their products are well-regarded, and they a have strong technology base," Willard said.

"What they really need to do is find a way to keep from losing market share to Windows NT at the low end," he added.

Gary Davis, president of Animation House, Inc. in Evansville, Ill., stopped using SGI systems about a year ago, mainly because NT systems offered better price/performance. The company creates special effects for movies and uses a wide variety of workstations.

"Granted, they have powerful new graphics tools out earlier than most other vendors," but that isn't enough, Davis said.

### OLD PROBLEMS

Richard Belluzzo, a former Hewlett-Packard Co. executive who in January became CEO at SGI, said in a statement that the company's poor performance was caused by several of the same trends that have plagued SGI in the past few quarters.

Belluzzo's strategy, which he will unveil later this month, is expected to include a line of Intel Corp.-based Windows NT workstations later this year and expanding SGI's efforts in the commercial Unix server space.

But time is running out. All of SGI's major rivals — with the exception of Sun Microsystems, Inc. — have been playing in the Windows NT workstation market for some time now and have well-established product lines, analysts said. And SGI's Unix server push will face strong rival products from Sun and HP. ☐

---

# CFO blends business know-how, enthusiasm for technology

CONTINUED FROM PAGE 1

customers via the World Wide Web. And he is the webmaster at Rand, a Chicago firm that processes trades of commodities such as grain, livestock and treasury bonds.

Vogelmann, 42, doesn't have any formal information technology duties or training. He has a Ph.D. in oceanography and an accounting background. But he taught himself enough about IT to take a hands-on role that blends technology and business know-how.

"I've kind of run with the ball," Vogelmann said. "Doing all this technology stuff is probably the most interesting aspect of my work. It just captures my imagination."

Rand CFO Jeff Vogelmann says handling IT duties is the most interesting aspect of his job and captures his imagination

BLACK/TOBY

### ROLE CALL

More important, Rand Financial is counting on technology — not historically a big priority for commodity clearinghouses beyond their bread-and-butter, trade-processing systems — to set it apart from its rivals on customer service.

"We've kind of been the stepchild of the financial industry in using technology," Vogelmann said. "But commodity clearing has almost become a commodity itself, so we're looking for ways to distinguish ourselves."

And having someone who can bridge between business needs and technology is crucial, said Jeff Quinto, Rand's president. "We're at a crossroads in terms of technology, and there are big penalties for making a mistake," he said.

Vogelmann's range of duties "is a unique combination," said Jeanne Ross, a research scientist at MIT in Cambridge, Mass.

But that kind of business/technology mix "is essential to really use IT effectively," Ross said. "In a lot of companies, the two sides just don't understand each other. It's like somebody speaking Japanese to somebody who is speaking English."

With 130 employees, Rand Financial is a relatively small company where workers might have to wear multiple hats.

But it processes more than 13 million trades annually, and the chief financial officer would usually be kept busy worrying about revenue and regulatory compliance.

"Jeff has a very complicated job [as CFO]," Quinto said. "But technology is his passion. It's hard to keep him away from it."

### MAKING TIME

Vogelmann said he has delegated enough accounting duties to free up half of his time for technology matters. Most of that is spent on the data warehousing project, which is being built by consultants from Platinum Technology, Inc. in Oakbrook Terrace, Ill. Managing Rand's Web site (*www.rand-usa.com*) takes up about 10% of Vogelmann's time.

Vogelmann actually joined Rand on the IT side despite not having any technology skills. He was hired in 1995 to manage development of a new trade-clearing system after Rand's hedge-fund parent company, where Vogelmann ran accounting, moved to Bermuda.

The new system was scrapped 12 months later after a vendor didn't deliver some software, but Vogelmann spent that year immersing himself in technology. Even after becoming CFO, "I couldn't help putting in my two cents' worth and volunteering" to help with IT, he said.

On the data warehousing project, Vogelmann teams with Rich Wierenga, Rand's management information systems director, and operations manager Rick Jacobson. For example, Wierenga still handles all the nuts-and-bolts technology issues needed to make the warehousing application run.

Working so closely with an end user "probably could complicate my life if it was a different person, but I don't think either one of us has an ego thing," Wierenga said. "Jeff's like a second pair of eyes. He can understand what I'm saying, and he's not frightened by technology." ☐

RDBMS had a good run.

Your relational database once ran well, but now you frequently encounter the demons of technological obsolescence. However, relief is in sight. You can now develop transactional applications without the limitations of relational technology. With Caché, the post-relational database, from InterSystems. Caché provides the performance and scalability needed for complex transaction processing. Unlike "object-relational" products that layer objects onto a relational database engine, Caché incorporates a lightning-fast *transactional multidimensional data model* and advanced object technology. In addition, even in backward compatibility mode with SQL for legacy applications, Caché achieves a several-fold improvement in performance and scalability. Now is the time for Caché, the post-relational database, available for GUI and Web-based applications on Windows 95 and NT, OpenVMS, and major UNIX platforms. Call us at (617) 621-0600, or visit our website at www.intersys.com/info.

CACHÉ™
InterSystems

*Post-Relational Database.*
*New Dimensions of Transactional Performance.*

EXCITING DEVELOPMENT

©1998 InterSystems Corporation. InterSystems Caché is a trademark of InterSystems Corporation. Other product names are trademarks of their respective vendors unix = illumination

HP's UNIX® systems let you shed light on all your information. Our HP 9000 V-Class Enterprise Servers and enterprise storage solutions running your decision

[illegible] 998 [illegible] Packard Company

support applications let you manage your data intelligently and accurately. And the clearer you see, the better you plan. For more info: www.hp.com/go/unix.

HEWLETT PACKARD

# Internet apps form bridge to buyers

▸ *Consumers want choice and quality; manufacturers want to deliver*

*By Randy Weston*

MANUFACTURERS USED TO focus on pleasing their distributors and retailers. But now manufacturers of everything from applesauce to bricks are building Internet applications to forge closer ties to consumers.

"In a competitive world, consumers have choices. And they are getting pickier, demanding products be delivered quickly and demanding quality," said John Costanza, president of the John Costanza Institute of Technology, Inc., a manufacturing consultancy in Englewood, Colo. He spoke to attendees at the National Manufacturing Week conference held recently in Chicago.

For example, Boral Bricks, Inc. in Atlanta has a system in showrooms — and soon on the Internet — that lets consumers see how their new home would look if it were built with various styles of bricks.

Chief Financial Officer Ron Henley said the system allows Boral to keep a close eye on homebuilding tastes so it can alter production output to meet consumer whims.

### STYLE OVER SUBSTANCE

"It is, in the end, a fashion industry. We have red brick, brown brick, white brick and every brick in between," Henley said. "Customers overall are becoming more and more demanding, whether it's the sizes, colors or quality. It is forcing us to become more in tune with those kinds of things."

According to Advanced Manufacturing Research, Inc. in Boston, most manufacturers are turning to the Internet to reach customers and their own sales forces (see chart).

E-mail is the big draw, but manufacturers also are interested in using the Internet for customer interaction and transaction processing, said Scott Lundstrom, an analyst at Advanced Manufacturing.

In fact, 30% of those surveyed use the Internet for transactions with trading partners and sales channels — and more than half will do so by the end of the year.

Nearly 60% of those surveyed also use the Internet to communicate with their sales forces, the Advanced Manufacturing survey found.

Mott's North America, Inc. in Stamford, Conn., is using new Internet applications from SAP AG to extend its R/3 system to customers, who now can view the status of orders from a World Wide Web browser.

Catherine Riordan, director of business solutions at the food processing company, said Mott's already has extensive electronic data interchange partners. But the Internet lets the company "open it up full bore" to smaller businesses and new trading partners, quickly and easily, she said.

### EASY ACCESS

Brother International USA in Bartlett, Tenn., in July will open up its R/3 system to key trading partners via the Internet.

The plan is to let suppliers bid for Brother's business and to give top-tier suppliers access to production schedules and inventory levels so they can automatically replenish supplies.

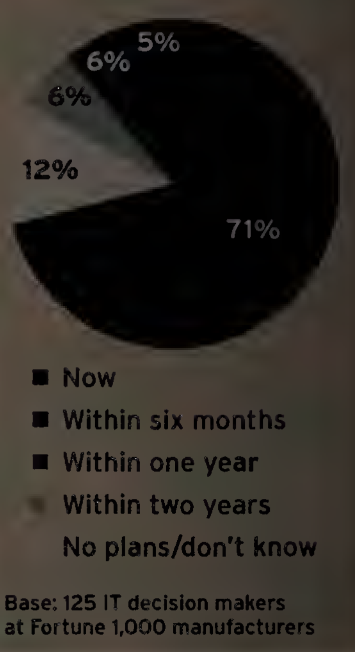
And top customers will be able to directly enter their order information, said Sam Cox, chief information officer at Brother.

Cox said the company will extend R/3 to the general public this summer via a Web site at which visitors will be asked what they like and don't like about Brother's word processors and typewriters.

The information will be stored in a data warehouse and will give engineers constant access to customer feedback so they can improve the products, Cox said. ☐

**REACHING OUT**

Manufacturers' plans to communicate with customers via the Internet:



Source: Advanced Manufacturing Research, Boston

---

# Extreme Networks lowers pricing bar for switches

*By Bob Wallace*

ONE START-UP is taking Layer 3 switching to the extreme end of the bargain basement.

Extreme Networks, Inc. in Cupertino, Calif., last week rolled out a Layer 3 switch — a system with built-in high-speed routing — at $150 per port. Rival vendors charge hundreds of dollars more per port for their switches (see chart).

"They're setting compelling new price points, and competitors will have no choice but to try and keep pace," said David Passmore, president of Net-Reference, Inc., a Sterling, Va., consulting and research firm. "But it's not clear if they can make up in volume what they lose in price."

Extreme and those that follow its pricing lead may suffer, but information systems managers stand to benefit. Layer 3 switching can reduce companies' reliance on expensive and slow backbone routers.

Layer 3 switching was financially attractive before Extreme's announcement because such systems cost hundreds of dollars per port compared with backbone routers that cost thousands of dollars per port.

**Layer 3 pricing***

| | |
|---|---|
| Bay Networks | $625 |
| Cabletron Systems | $499 |
| Foundry Networks | $437 |
| **Extreme Networks** | **$150** |

* Per port, as of April 1

Extreme's new Summit48 has 48 ports that can operate at 10M bit/sec. or 100M bit/sec., and two Gigabit Ethernet uplinks. The switch costs $11,995. It can route more than 10 million IP packet/sec. The system's software will be enhanced to support routing of Novell, Inc.'s IPX traffic this summer.

The Summit48 can be bought as a Layer 2 switch for $7,995, which is $100 per 10M/100M bit/sec. port. It can be upgraded to a Layer 3 system for $4,000. The switch will ship April 10.

The Extreme switch can interoperate with existing routers using standard IP routing protocols. The system can be managed through a Web interface, Simple Network Management Protocol package or a command-line interface. ☐

---

# H & R Block plans to chop DOS

*By Craig Stedman*

LIKE THE IRS, the company that helps the most taxpayers deal with the feds is on a big technology modernization kick.

H & R Block, Inc., by far the largest tax preparer in the U.S., is starting to write off the DOS-based computing setups that still greet customers at its 4,500 branch offices.

Taking their place will be Windows applications for preparing returns and reporting sales data to corporate headquarters in Kansas City, Mo.

The sales records then will be stored in a data warehouse and made available for analysis on the company's intranet.

H & R Block also is starting to install PeopleSoft, Inc.'s business application software in its accounting and human resources departments.

### PAPER & PENCIL NO MORE

The technology overhaul reflects a major change of heart at a company that just eight years ago was still preparing most of its tax returns with paper and pencil, said Judy Keisling, a business-side vice president who is a liaison between H & R Block's tax operations and information systems.

"Over the years, we have been more of a conservative company as far as automation goes," Keisling said.

But H & R Block now needs more functional software for preparing tax returns, and more accurate and timely data for analyzing branch-office performance and customer demographics, she said.

H & R Block, which had $1.9 billion in revenue in its fiscal year ended last April, dwarfs all competition in the tax business. Its closest national rival had sales of just $31.4 million last year, according to industry watchers.

**H & R Block's Judy Keisling: The tax preparer's reporting system "is sort of semi-automated today"**

But H & R Block is getting more technology-driven to boost efficiency and to attract more high-income customers, said Martin Romm, a stock analyst at Credit Suisse First Boston in New York.

"And I think they want to be out in front of the IRS on technology change," Romm said.

The new tax preparation software, which is being piloted at 400 offices this year, lets employees see exact replicas of IRS forms on their PCs, said Neal Shaw, director of tax development at H & R Block.

The escape from DOS memory limits also means they can more easily handle complicated returns, he said.

The Windows-based application will be rolled out fully next year, Shaw said.

### TESTING

And H & R Block next year plans to start piloting the new reporting system, which eventually will implement Sybase, Inc.'s Adaptive Server Anywhere database at all the branch offices.

The reporting system will automatically collect data from the tax preparation software and replicate it to a central Sybase database, which will feed the information into H & R Block's data warehouse.

That will replace "a very manual process" of exporting and importing files from database to database, Shaw said. ☐

# DON'T BE A SUCKER

For a clever headline. For a cute mascot. For a catchy jingle. Instead, try simply looking at the product. Just compare the quality, support, features and price, then decide who makes a better notebook. That's what *PC Week* readers did when they ranked us first in customer satisfaction. And perhaps we won *PC Magazine's* Editors' Choice Award for every single notebook we've released because people have realized that a better laptop is more useful than a snappy tag line.

## TRANSPORT® VLX

- 166MHz Intel Pentium® processor with MMX™ technology
- 16MB EDO RAM
- 2.1GB hard drive
- 12.1 TFT SVGA, 800x600 display
- 256KB L2 pipeline burst cache
- PCI bus with 128-bit graphics accelerator
- MPEG compatible
- Zoomed Video ready
- Microphone and 16-bit stereo sound
- 20X modular CD-ROM drive
- 2-way infrared port
- Touchpad pointing device
- Modular floppy drive
- Li-Ion battery
- Microsoft® Windows® 95 and MS® Plus!
- 5-year/1-year Micron limited warranty

**$1,399**
Bus. Lease $49/mo

- w/ 40MB of RAM
- w/ 56Kbps x2 US Robotics modem*
- w/ Microsoft Office Small Business Edition

**$1,899**
Bus. Lease $66/mo

## TRANSPORT XKE

- 233MHz Intel Pentium processor with MMX technology
- 32MB EDO RAM
- 3GB hard drive
- 13.3 TFT XGA display
- 512KB L2 pipeline burst cache
- 2 modular expansion bays
- 2 infrared ports, S-Video, NTSC, game, USB ports
- 20X CD-ROM with AutoPlay technology
- 128-bit, 2MB DRAM graphics
- CardBus and Zoomed Video
- 16-bit stereo sound and microphone
- 56Kbps fax/modem*
- Pick-a-Point dual pointing devices
- Microsoft Wndows 95 and MS Plus!
- Microsoft Office 97 Small Business Edition
- 5-year/1-year Micron limited warranty

**$2,699**
Bus. Lease $92/mo

- 266MHz Intel Pentium processor with MMX technology
- 24X CD-ROM with AutoPlay technology

**$3,199**
Bus. Lease $109/mo

MMX intel inside pentium processor

TransPort Vlx
Jan 98

TransPort Xke
Oct 97

PC Magazine Editors' Choice
TransPort Xke
Feb 98

MICRON ELECTRONICS

TO ORDER CALL TOLL-FREE **800-362-1204** OR ONLINE AT **www.micronpc.com**

©1998 Micron Electronics, Inc. All rights reserved. Micron Electronics is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling [illegible] money-back policy does not include [illegible] shipping/handling charges, applies only to Micron brand products and begins from date of shipment. [illegible] are subject to Micron Electronics current terms and conditions of sale. [illegible] are registered trademarks and MMX is a trademark of Intel Corporation. Microsoft, Windows, Windows NT and the Windows logo are registered trademarks of Microsoft Corporation. Product names of Micron Products are trademarks of Micron Electronics, Inc. [illegible] publication are for identification purposes only and may be trademarks of their respective companies. *Maximum transmission speed of up to 56Kbps when downloading data and 33.6Kbps when uploading. However, actual performance is dependent upon numerous factors [illegible] the maximum potential.

998 Compaq Computer Corporation. All rights reserved. Compaq registered U.S. Patent and Trademark Office. ProLiant is a registered trademark of Compaq Computer Corporation. Microsoft and Windows NT are trademarks
osoft Corporation. Published TPC-C results as of 2/23/98. TPC and TPC-C are registered trademarks of Transaction Processing Council. All other products are trademarks or registered trademarks of their respective companies

| | Compaq ProLiant 7000 | Sun Ultra Enterprise 450 |
|---|---|---|
| Price/Performance | $39.25/tpmC | $56.60/tpmC |
| Total System Cost | $485,618.00 | $654,330.46 |
| TPC-C Throughput | 11,055 tpmC | 11,559 tpmC |
| Operating System | Windows NT Server 4.0, Enterprise Edition | Solaris 2.6 |
| Database Manager | Microsoft SQL Server 6.5, Enterprise Edition | Sybase Adaptive Server Enterprise 11.5.0.1 |

It's clear. It's out there. It's visible to the naked eye. The future of enterprise computing lies not just in scalability, manageability and reliability, but also in a dramatically lower cost of ownership. A reality no one understands better than Compaq and Microsoft®

You can see it in the chart, which shows what a Compaq server running Windows NT® can do. At a price/performance up to 31% less than the Sun Solaris UNIX system. And all while providing built-in underlying services today's distributed applications require.

Last year, shipments of Windows NT Server increased by over 80%. And Compaq, the reference development platform for Windows NT, accelerated its lead as the world's #1 server provider.

Enterprise computing is your lifeblood. Live long and prosper. For complete details on Compaq and Windows NT visit www.compaq.com/products/serversolutions/

Microsoft

COMPAQ

# Network tools and services save staff resources

*By Patrick Dryden*

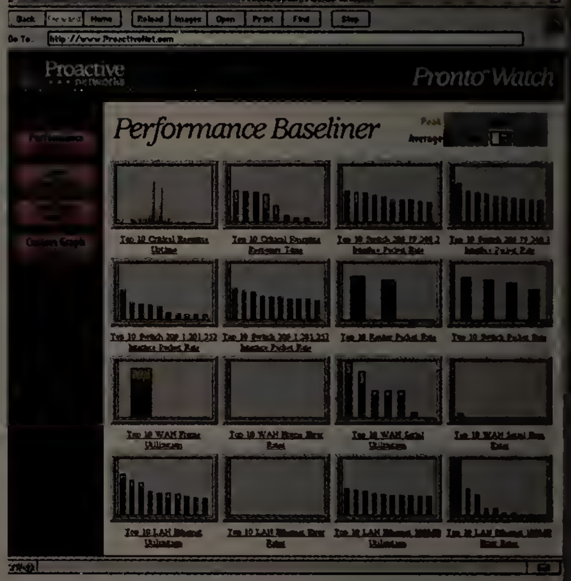
THE NETWORK TEAM AT Solectron Corp. was "chasing fires left and right, trying to figure out periodic slowdowns" with no help to understand performance from its reactive management tools, said Ken Adamson, network manager at the manufacturer in Milpitas, Calif.

Instead of seeking a network analyst — which is especially scarce and costly in Silicon Valley — Adamson tried automated analysis software from start-up Proactive Networks, Inc. in Santa Clara, Calif. The turnkey tool, called Pronto Watch, freed time for three staff engineers by summarizing performance and pointing out problems, Adamson said.

Pronto Watch, due his week, joins a growing number of tools and outside services that can unburden a staff that must tune and troubleshoot complex client/server networks, analysts said.

For example, reporting software from vendors such as Concord Communications, Inc. in Marlboro, Mass.; Desktalk Systems, Inc. in Torrance, Calif.; and Kaspia Systems, Inc. in Beaverton, Ore., condenses thousands of network statistics into trends and problem situations. Also in this field are network monitor services from International Network Services, Inc. (INS) in Sunnyvale, Calif., to track network performance, and services from NetOps Corp. in Pleasantville, N.Y., to predict network faults.

Even with this technology, "you still need an added layer of human analysis to interpret and act on this information, whether through your staff or through a service provider," said Mark Bouchard, a network management analyst at Meta Group, Inc. in Westport, Conn.



**Pronto Watch monitors network performance and alerts engineers so they can check problems remotely**

The EnterprisePro service from INS quickly provided "a clearer understanding of network utilization, uptime and carrier performance" than was possible with using whatever tools were on hand, said Chuck Savage, assistant vice president of network planning and management at State Street Bank in Boston.

After a year, the service still supplements staff knowledge, Savage said. "It saves time spent searching different resources and helps us plan changes according to actual growth."

Outside services such as INS and NetOps help most "in the early stages, when you lack staff expertise in-house," said Kevin McElearney, network operations manager at Media One Express in Boston. After building staff and acquiring tools, it may be more cost-effective to take over analysis tasks, he said.

Beta testers of the Proactive Networks tool said it should help them maintain or reduce staff, even as they increase services. "We don't want to increase our head count to expand coverage" to nights, weekends and holidays, said Hank Waash, director of operations at software developer Ross Systems, Inc. in Atlanta.

Pronto Watch sends beeper alerts to engineers on call so that they can check problems from home. The software's simplicity and the remote server maintenance by Proactive Networks eliminate the need to invest in a big management platform, Waash said. ☐

No half-baked ideas.

You can't depend on "quick-fix" IT recipes and rehashed answers to tackle the technology challenges your company faces.

To create a definitive IT advantage, you need answers that will work today and address your company's goals for tomorrow. Answers reached through on-going dialog with your IT professionals and a thorough understanding of your business. META Group is the only IT advisory and research company providing that kind of fresh thinking and one-on-one advice.

Sound appealing? More than 1,400 META Group clients around the world think so. To learn more, call us at 1-800-945-META or visit us at www.metagroup.com/cw.

Satisfy your craving for fresh thinking at META Group.

**Fresh Thinking.**
**Relevant Answers.**
**Clear Direction.**

META Group

COMPUTERWORLD

# QUICK STUDY

Hot trends & technologies in brief

# Technology-enabled selling

**DEFINITION:** Technology-enabled selling is a broad industry term that includes sales force automation, which is the largest segment of the market. Technology-enabled selling includes everything from contact management software used by the sales force to high-end systems that link salespeople to the marketing department, company telesales center, service departments and customer support representatives. Also included in this arena are tools used to provide a wealth of customer information, product pricing and product data.

## Stats not good for sales technology

*By Kim Girard*

**AT ISSUE**
User acceptance

MANY FORTUNE 500 companies are moving their sales and marketing people from simple, contact management software to large, integrated systems that include marketing encyclopedias, configuration management, mobile solutions and more (see components list at right).

But those integrated systems leave many users less than thrilled when it comes to taking this technology on the road. Salespeople often don't want to use a notebook on a sales call or learn complicated programs, according to Kurt Johnson, an analyst at Meta Group, Inc., a Stamford, Conn.-based consultancy. "These tools are enablers that won't replace the human touch," he says.

User resistance doesn't stop there.

Many companies are encouraging their sales forces to participate in team selling. That involves using shared databases that store information about previous sales calls, support requests, unresolved maintenance issues, pricing and product availability.

Those systems, for example, will let a salesperson in Massachusetts enter information about an account that will be used by a salesperson in California. But team selling isn't for everyone, says Rob DeSisto, an analyst at Gartner Group, Inc., also in Stamford.

"Many [sales] representatives look at [the shared customer databases], and they don't want to share their prized jewels," DeSisto says. "That's the cultural issue."

If user resistance isn't enough, consider the following: More than three quarters of the businesses that install a sales force automation system are dissatisfied, and about 61% of those implementations fail to produce any measurable benefits, according to Gartner Group.

What's more, if the vice president of sales isn't included in the project, expect a 90% failure rate. At a cost of about $3,500 per user at the high end and six months to a year to implement, a failed project is hard to swallow.

Nonetheless, investment in those systems, often driven by top management, isn't slowing down. The technology-enabled selling market for software and services will reach $5.1 billion in 2002, up from $1.5 billion expected this year.

Christopher Lochhead, an executive vice president of marketing at Vantive Corp. in Santa Clara, Calif., says despite continued investment in these high-end systems, many companies remain in the "early adopter stage."

"The reality is that for most Fortune 500 companies, the No. 1 sales automation system on the planet is Excel," Lochhead says. ☐

**QUICK STUDY ONLINE** For research, vendors and related articles, go to *www.computerworld.com*. Click on Resource Center. Under In Focus, click on QuickStudy.

## CASE STUDY

*Atlanta-based Lanier Worldwide, an office equipment seller and subsidiary of Harris Corp., is rolling out a sales force automation system for 1,268 mobile workers. Here's how the system works:*

❶ Joe, a Lanier salesman, is out in the field with his Compaq notebook running Aurum Corp.'s SalesTrak, mobile solution software.

❷ The call center uses Aurum's sales and marketing call center application to collect customer information.

❸ The call center employee electronically alerts Joe that Company A needs three fax machines and four copiers.

❹ Joe goes to Company A and uses Calico Technology's sales configuration and quoting software to set pricing. An invoice is generated, which will be tied to Lanier's financial systems.

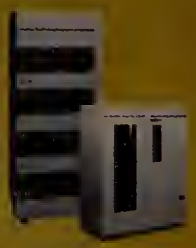
ILLUSTRATION BY JANELL GENOVESE

### SOME COMPONENTS OF TECHNOLOGY-ENABLED SELLING

- **Marketing encyclopedia:** A comprehensive database of a company's marketing and sales material. It can be placed on intranets, extranets, the Internet or CD-ROM and is used by sales and marketing units for presentations, proposals and customer meetings.
- **Configuration management:** Manages complex product pricing and configuration. It also manages sales commissions and promotions. A salesperson enters information about what a client wants, then the system tells the salesperson what products are available using a rules-based search engine.
- **Pipeline viewer:** Gives the user a status report on where the deals are in the sales process. Lost deals are marked, acting as an early-warning system and flagging areas where the salesperson needs to improve.
- **Forecast viewer:** Summarizes potential, expected and closed sales deals. Information shows a salesperson how close he is to making quota. The system interface provides at-a-glance access to sales opportunities, pipeline and forecast information. Sales staff can compare performance to quota.
- **Mobile solutions:** Distributes leads to the sales force that are generated by telesales or call center representatives. Salespeople also can use data synchronization during a standard electronic-mail update to download new sales leads generated in telesales. Also, sales forces are starting to use Cellular Digital Packet Data or a PalmPilot with a wireless modem hooked to their system to access contacts, business opportunities and leads from anywhere.
- **Marketing and sales campaign management:** Tracks and measures return on investment for a given marketing campaign.

*Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at* ***stefanie_mccann@cw.com.***

It is more than a new cure for headaches. It is over four years of lab research and seven years of clinical trials resulting in a terabyte of analytical reports, queries and electronic images distributed across six servers and three platforms. But without the right storage system in place, it can cause more pain than it relieves. Call StorageTek® at 1-800-STORTEK or visit us on the Web. Because when the health of your business depends on your information, you should have an expert taking care of it.



www.storagetek.com/cure

StorageTek

Where the world's information goes.

© 1998 Storage Technology Corporation. All rights reserved. StorageTek is a registered trademark of Storage Technology Corporation.

OPINION

## Pokey's peril

The recent saga of 12-year-old Chris "Pokey" Van Allen and the toy company that is trying to take away his Internet domain name is a cautionary tale for the age of electronic commerce.

Prema Toy Co., owner of the cartoon characters Gumby and Pokey, is looking like a big bully of a Goliath to an adolescent David in the stories that hit the Internet community a few weeks ago.

On the sidelines, we've got outraged parents, stymied lawyers, flaming Usenet debates and complex questions about intellectual property rights, trademarks and the control of Internet domain names. To top it off, Gumby's creator is posting on the Web his own anguished version of events.

"I want the whole thing to go away," said Chris, who got more than 3,000 E-mail messages of support as the story was whipped up into the Internet's version of an international incident. "I just want to keep my birthday present."

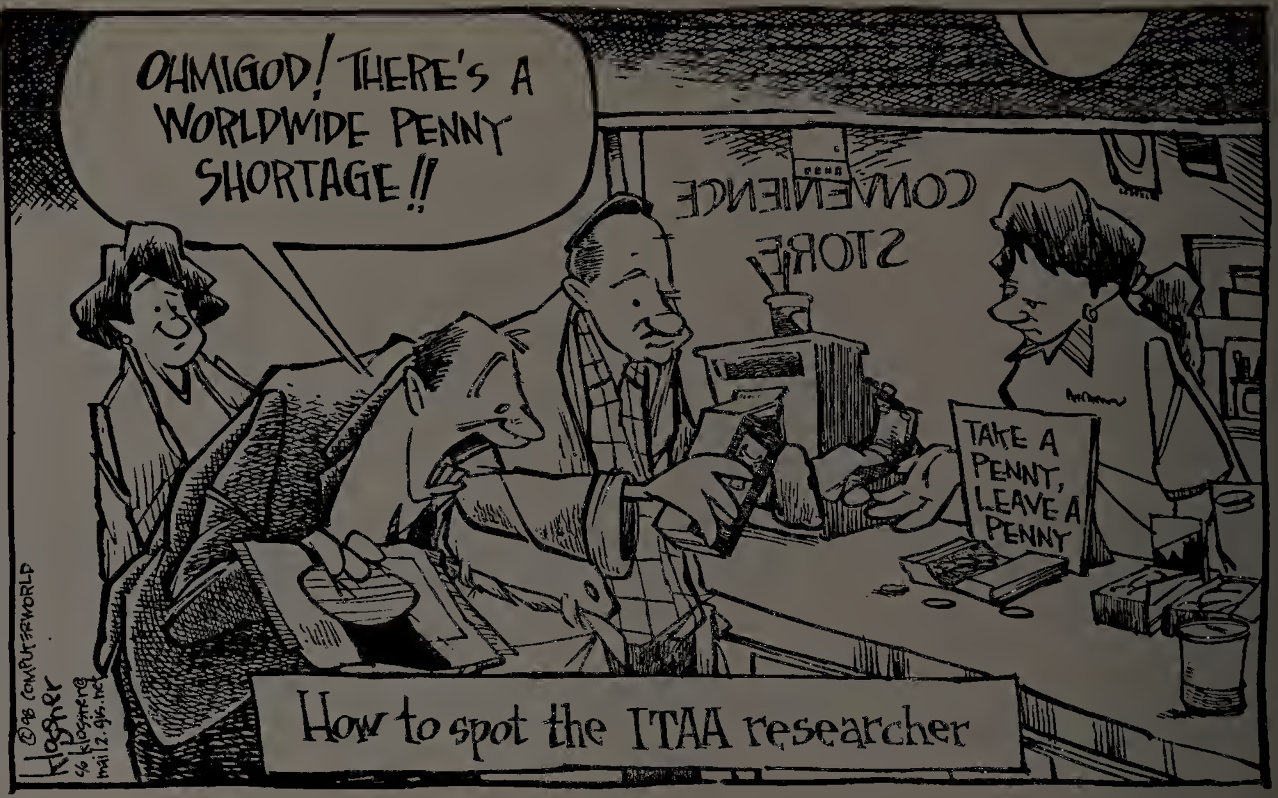
For that birthday, Chris' dad paid $35 to Network Solutions, Inc. (NSI) to register Chris' longtime nickname as pokey.org. Pokey.org clearly is a nonprofit personal Web site with no connection to Gumby's sidekick. So it should be immune from a trademark dispute, right?

Prema, which has a hard time qualifying as a corporate Goliath with just two staffers other than Gumby creator Art Clokey, insists it is protecting important trademark rights. "We're not big mean lawyers. We're trying to be reasonable," said Ian Ballon, attorney for the toy company. His verbal offer to the Van Allens' lawyer to give Chris a royalty-free license for pokey.org was rejected. By June 17, under NSI rules, both parties must come to agreement or a very nice kid loses his domain name.

So how can your company avoid a PR nightmare like this one? First, look carefully before you unleash the lawyers. If Gumby's creator had sent the Van Allens a kinder, gentler letter instead of a legalistic missive ordering their child around, this would likely be a nonstory. Second, move swiftly to fight misinformation with your own information. Finally, don't underestimate the 'net generation and its savvy use of this new medium. Gumby and Pokey certainly won't make that mistake again.

Maryfran Johnson

Maryfran Johnson, *executive editor*
Internet: *maryfran_johnson@cw.com*


OHMIGOD! THERE'S A WORLDWIDE PENNY SHORTAGE!!
CONVENIENCE STORE
TAKE A PENNY, LEAVE A PENNY
How to spot the ITAA researcher
©98 COMPUTERWORLD
Kloshner
c/o kloshner@mail2.gis.net

LETTERS

## Encryption essential as more E-commerce is conducted

I BELIEVE *Computerworld* is mostly correct in the "Clueless or clued in?" story [CW, Feb. 23], but it was a bit arrogant in its assessment.

My company is a reinsurance firm that also deals in specialized program (doctors, lawyers and real estate agents) insurance.

A great deal of sensitive data and information passes through and resides in our databases. We have had customers ask about our firewalls as part of their supplier certification prior to doing business with us.

A secure environment can be worth advertising. As more commerce is conducted over the Internet, I believe you will see this.

I receive *Computerworld* and your @Computerworld online updates and thoroughly enjoy them. Please keep up the good work.

*Charlie Carroll*
*Overland Park, Kan.*
*charles.carroll@ercgroup.com*

I HAVE TO TAKE ISSUE with *Computerworld*'s "Clueless or clued in?" and the author's assertion that encryption does not do anything to "open a company's coffers to let the profits pour in."

Encryption or cryptography provides capabilities, such as confidentiality and authentication, that are fundamental to being able to do business in a networked environment.

Such capabilities allow companies to both streamline their business processes and deploy new applications. Opening new markets and doing business more efficiently directly contribute to a business's overall financial performance, market position or competitive advantage. Savvy technology companies and venture capitalists alike see the potential.

**Savvy technology companies and venture capitalists see the potential of encryption.**

*Sue Geller*
*SRG Associates, Inc.*
*Hopewell Junction, N.Y.*
*srginc@worldnet.att.net*

## Companies must be more than just aware of Y2K problem

THANK YOU for the article "Will the chain be unbroken?" [CW, March 9]. It did a great job of raising awareness of the year 2000 vendor supply-chain problem.

But companies need to do more than identify and audit all their vendors. They need a system that allows modeling of the entire organization (including the technology and business inventory) and enables risk management, risk analysis, mitigation planning and contingency planning.

Companies should be able to perform a "what-if" analysis on vendors in the supply chain and assign probabilities to the likelihood that they will be compliant in time.

For companies concerned about legal exposure, this "snapshot in time" could be used as very cheap lawsuit insurance.

*Charles H. Isaacs*
*Thinking Tools, Inc.*
*Monterey, Calif.*
*cisaacs@thinkingtools.com*

## Computerworld draws biz users, not techies anymore

I DISAGREE WITH *Computerworld* columnist Frank Hayes' basic assumption that techies care more about the business than they do about using new technology ["IS and the big picture," CW, Feb. 23].

I noticed that he used a *Computerworld* survey as the basis for his conclusions. Well, I've been in the computer business for the past 10 years and have come up with some of my own conclusions.

Techies don't read *Computerworld.* I see *Computerworld* on the desks of business analysts, managers, systems analysts and business users. Techies' desks are usually cluttered with *Windows NT* magazine, Unix, networking, and specific technology periodicals.

I think *Computerworld* is a wonderful 80,000-foot view of the information technology world. That is why your survey showed a higher figure for "contributing to business goals" over "using new technology."

*Karl E. Auleciems*
*karl@acgsoft.com*
*Minneapolis*

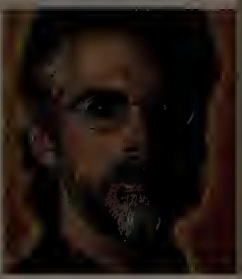
Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

# Nowhere to hide from the year 2000

## *William M. Ulrich*

As the century draws to a close, the time will come for many of us to either run and hide or to take a stand and help our communities. What am I talking about? For those of you who haven't been tuned in to various year 2000 discussions lately, there are several IT professionals who have decided to escape and establish year 2000 "safe havens."

Their plans include creating environments that are immune from the disasters they say will plague us as computers begin to fail near the end of this century. I question the rationale, on the one hand, and the self-centered attitude, on the other, of such a move.



Safe havens are self-contained, emergency-equipped compounds that have been paid for in cash to avoid mortgage foreclosures should a year 2000 problem result in banking failures. The compounds apparently will have their own water supplies, power sources and ability to grow food. They are typically located in warm climates so that extended power outages have little impact on the lifestyle.

**Safe-haven alarmists could create the very problem they intend to flee.**

The situation being created by the safe-haven alarmists is disconcerting on several fronts.

First, the potential cause-and-effect relationship of the safe-haven mentality is frightening. If enough respected IT professionals head for the hills in 1999 and the exodus is publicized in the mainstream press, people could interpret that as a reason to panic. Clearing out bank accounts and food stores might become commonplace. The alarmists essentially would have created the problem they intended to flee.

The second issue concerns the role that industry professionals can play at the local level as 2000 approaches. Systems in local governments, small companies and nonprofit agencies could fail if organizations aren't warned in time. Infrastructure services such as water distribution could be interrupted if they aren't inspected for year 2000 errors.

It seems to me that as computer professionals, we have a responsibility to work with local governments and community organizations to help prevent such problems. I've volunteered time to educate various public-sector agencies in my community. I wanted to alert them to the broad range of IT, embedded-system and supply-chain problems that may occur if they don't correct year 2000 problems.

My biggest concern with the safe-haven concept is that if the worst-case scenario envisioned by the alarmists comes true, computer professionals should be around to help. The federal government can't dissipate panic at a community level. It's up to those of us with computer technology backgrounds to establish grassroots community efforts to educate people about the year 2000 problem. Because we understand the nature of the problem, we can provide a voice of sanity. One approach is to write letters to your local newspaper or to speak to your chamber of commerce.

One IT professional recently wrote me that he'd offered to help a local municipality and was rudely ignored. I can sympathize. My local government initially thought I was a political spy. But it's important that you persist. Give something back to your community. If you decide to stay and fight, you'll feel better about yourself when all is said and done.

Say no to safe havens. □

---

*Ulrich is president of Tactical Strategy Group, Inc. in Soquel, Calif., and coauthor of* The Year 2000 Software Crisis: Challenge of the Century *(Prentice Hall, 1997). He can be reached at tsginc@cruzio.com.*

---

# Robbing the cradle for IS talent

## *Michael Schrage*

And now, a postindustrial parable that eerily echoes a sorry saga from the Industrial Age. A California government agency starved for technical talent decided to reach out to the community.

It couldn't pay very well, and it couldn't outsource overseas. So what did it do? It started hiring and training high school students as programmers and network administrators.

The agency's CIO says the kids are alright. Honest.

You gotta love it! IT wages are higher than they've ever been and still rising. Farming out work to Bangalore or Andersen Consulting isn't cheap. Neither, apparently, is hiring — or rehiring — middle-aged software jockeys. So why not go with youth? Why not look for GenX-ers who've grown up with PCs to come in as "interns" and "part-timers" to gain "valuable experience" working for agencies, small businesses and frugal Fortune 1,000 firms that oh-so-desperately need Web sites maintained and LANs administered?

Excuse the sarcasm, but I know a serious trend when I see one. This is one. If the economy stays healthy and demand for digital talent holds, I confidently predict that within the next five years, fully two-thirds of *Computerworld* readers will find themselves working with part-time technologists between the tender ages of 15 and 22.

Some of those youngsters will be writing code. Others will answer the help desk phones. Or do tech support. Or administer LANs. Maybe they'll be doing it for academic credit. Maybe they'll be doing it for the money.

But they will be doing it.

Between the high schools, the universities, the technical schools and, especially, the community colleges, the U.S. computer industry will see its biggest youth movement since Bill Gates abandoned Harvard for Albuquerque.

### HUMBLE BEGINNINGS

By the way, you do remember that billg@microsoft.com and his buddy Paul Allen got their start as computer consultants in high school, don't you? There's probably never been a better time to be a 17-year-old technogeek. In suburban New York, Boston, Seattle and throughout Northern California, there are teen-agers who make more than $60 per hour writing JavaScripts for hire.

Be honest: If you found a bright teenager who could sub for the webmaster or keep your LANs in tune, would you pay the kid a couple hundred bucks per week? What if the local community college offered to arrange it? What if the high school made the student available two afternoons each week? Would you immediately reject the idea? Or would you rather meet the kid first?

**Would you pay a bright teen-ager who could sub for the webmaster or keep your LANs in tune a couple hundred bucks per week?**

Five years ago, those questions would have sounded silly. Today, hundreds of companies are trying to cut deals with the local university to get first crack at the systems administrators and Unix hackers. Do you think that sooner or later those same companies will reach out to the high schools?

I do.

Is that a good thing? I'm not sure.

Although we won't see teen-agers pressed into software sweatshop servitude tweaking their technologies 12 hours per day, I believe this influx of young digital guns will have as big an impact on the human capital future of IS as legal immigration. □

---

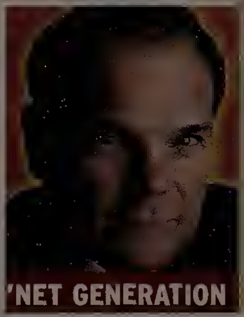
*Schrage is a research associate at the MIT Media Lab and author of* No More Teams! *His Internet address is schrage@media.mit.edu.*

# Youth should be served at Comdex

## *Don Tapscott*

It isn't too late for Comdex/Spring '98 to change its age policy. Rather than restrict attendance to those *21 and older*, it should restrict attendance to those *21 and younger.*

That way, Comdex would become attractive to the real influencers of the communications revolution: the 'Net Generation.



**For some bizarre reason, show organizers think kids should be restricted from the hallowed halls.**

But Comdex has it backward. For some bizarre reason, show organizers think kids should be restricted from entering the hallowed halls, when in fact it is young people who are becoming the most important consumers of IT.

On April 20, the opening day of Chicago Comdex, there will be 80 million people in the U.S. between the ages of 1 and 21. Technology to them is like the air. For the first time ever, children are an authority on the central innovation in society.

My research suggests that the most important influencers of computer and software purchases in the home are children, not adults. Increasingly, kids are hopping into the driver's seat of the multibillion-dollar education market; the students know more than their teachers about the greatest learning tool ever. Not surprisingly, kids are also leaders in purchasing technology and software for entertainment. As this wave enters the workforce, it's beginning to change our thinking about technology and the nature of the corporation itself.

So what's the explanation for the Comdex ban on kids? Is the show worried that youngsters might expose vaporware on the show floor? It's more likely that when it comes to kids and technology, Comdex, like many adults, has some backward views. Kids are seen two ways: Either they're little victims, bereft of social skills, 'net-addicted, dumbed-down screen-agers constantly preyed upon by abductors and the like, or they're little criminals who hack corporations, lurk in porn sites, do drug deals or join cults online.

The truth is that although such examples exist, nearly all children are learning, developing and thriving in the digital world. They need better tools, better access, more services and more freedom to explore — not the opposite.

When Comdex changes its policy, it should send letters of apology for its misinformed and mean-spirited ban. Such letters should go to the hundreds of kids I worked with when writing *Growing Up Digital*. They include:

- Alana Johnson, 13, of California, who has been designing Web pages professionally for two years. She has a string of satisfied clients and subcontracts work from her father's firm. Alana's father gets it. Why doesn't Comdex?
- Gautam Vasudevan, 16, also of California, a co-founder of Digital Mirage, a company that specializes in sophisticated communications software. He is also one of dozens of teen-agers who consult on the Workscape of the Future project at Xerox's famous Palo Alto Research Center (PARC). Industry visionary John Seely Brown, who runs PARC, gets it. Why doesn't Comdex?
- Michael Furdyk, 15, of Toronto, who in conjunction with colleagues from around the world, has built Mydesktop.com (*www.mydesktop.com*). It gets 8 million hits per month, making it more influential on the Web than many Fortune 500 companies and national governments. "I'm frustrated. People under 21 are still not allowed into Internet World and Comdex, even though they keep sending me free passes," Furdyk says.

Rather than excluding Furdyk, Comdex should hire him to help run it. ☐

*Tapscott is chairman of the Alliance for Converging Technologies and an authority on the impact of the digital media on business and the economy. He has written six books, including* Paradigm Shift *and* The Digital Economy. *His latest book is* Growing Up Digital: The Rise of the Net Generation *(McGraw-Hill, 1998).*

---

# The serveware revolution

## *David Moschella*

The Web is one of the few places where software and services are the same thing. In other words, the network services you provide are effectively synonymous with the software you write. I call this the "serveware" revolution.

Serveware is more than just another hybridized buzzword, such as vaporware. Much of the future of business on the Web will be determined by what happens when software and services converge into various online services, be they banking, shopping, education or health care. Software and services have always had fundamentally different attributes. As they come together in serveware, which of those traits will prevail?

Consider the underlying economics. There are two main types of services activity. In people-intensive businesses such as computer services, law and hairdressing, taking on more work usually requires taking on more people. That leads to limited or even negative economies of scale. It's no accident that the largest computer services firms — IBM, EDS and Andersen Consulting among them — are the most expensive. The lowest-cost offerings usually come from the smallest firms. That tends to create highly fragmented niche competition.

Infrastructure-intensive services, such as airlines, telecommunications and finance, usually have significant scale economies but often face brutal commodity competition. People usually don't think of services as commodities, but what's less differentiated than an airline seat or a stock trade? Additionally (and critically), low customer-switching costs are an inherent part of any true commodity business.

Software markets tend to have just the opposite economics and switching costs. Unlike people-intensive businesses, software markets have essentially infinite economies of scale. No matter what it costs to develop any computer program, the cost of a second copy is virtually nothing. Therefore, the average cost per unit falls steadily with volume, eventually approaching zero. That provides huge cost advantages to the largest supplier.

And unlike services, software-switching costs tend to be substantial. It's the combination of infinite scale economies and high customer lock-in that explains why software markets tend to be so highly concentrated. It isn't an accident that Microsoft is so dominant. Such patterns have always characterized the software business. Consider MVS, NetWare and Lotus 1-2-3.

**The future of business on the Web will be determined by what happens when software and services converge.**

Now consider serveware. Will the Web evolve toward fragmented and highly competitive services-style markets? Or toward highly concentrated, monopoly-prone software-like structures?

As the word serveware implies, I think we will see a real mix of the two. Like services, Web-based businesses will find it difficult to lock in customers. Name a Web site that has established high switching costs. But like software makers, Web market leaders will enjoy tremendous economies of scale. Once a Web site is built, the cost of serving additional users can easily fall toward zero.

All that seems to boil down to a simple message: Get going.

No matter what Web service your company provides, you will inevitably face tough competition. But being big will help a lot, and being early is a huge part of becoming big. Most important, the logic of serveware says that catching up won't be as easy as it used to be. ☐

*Moschella is an author, independent consultant and weekly columnist for* Computerworld. *His Internet address is david_moschella@cw.com.*

The industry calls it the Unframework.

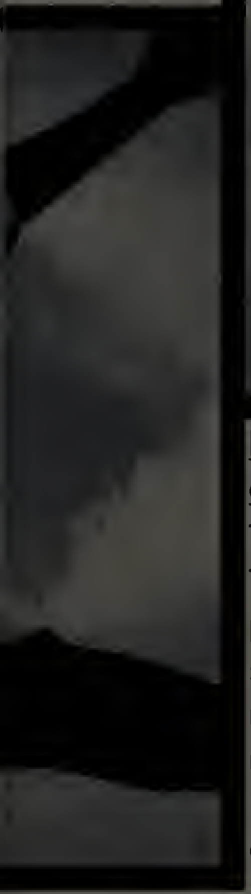
We call it the future.

PLATINUM
TECHNOLOGY

**Enhance productivity across the organization.**
Because ProVision isn't framework-dependent, neither are you. Configure and install in weeks, not years. And every tool in the suite shares common data, GUI and configuration management, so familiarity with one tool translates into greater productivity with any of the others.

**Rise to the challenge of integrating systems and database management.**
The future is here and it's called ProVision. A best-in-class suite that works with or without a framework, uniting systems and database management to automate and elevate your entire IT infrastructure.

© 1998 PLATINUM *technology, inc.* All rights reserved.



**Introducing ProVision**

Finally, you're free to manage systems and databases together. Free to use best-in-class tools as part of an integrated suite. Free to deploy each tool as needed. And that opens up a new world of opportunity for you, your staff and your business. Find out how at **www.platinum.com/provision**

**Emancipate the enterprise.**
The #1 job scheduler. The industry-leading performance management suite. The #1 database reorganization tool. All ready and waiting to free DBAs from the confines of their consoles, let directors finally see things from their point of view and enable IT staff to collaborate with best-in-class tools that interoperate to solve business problems better and faster.

make IT shine™

*data • systems • apps*

PLATINUM
TECHNOLOGY

**Fix it right the first time with Viasoft's ChangeWorks, and get fewer surprises when you test.**

History has taught us a valuable lesson: the sooner you find a problem, the cheaper it is to fix. It's just as true for year 2000 projects.

Visit our web site and enter your actual year 2000 project data into our Throughput Analyzer. You can compare costs and see how much ChangeWorks™ can save you in the testing phase. (Hint: Errors detected before getting to test are 10x less expensive to fix.)

So the lesson is clear. Use ChangeWorks to fix it right the first time, and increase change and testing throughput. Or wait to discover a hidden error. And watch your entire business become history.

**Find out what hidden errors will cost, FREE. Use our Throughput Analyzer at www.viasoft.com/analyzer2. Or call 1.888.VIASOFT, ext 101.**

VIASOFT
*Managing the Business of Information Technology*

[illegible] rights reserved

# Briefs

## What consultants really make

Average partner compensation at companies with one to 500-plus consultants

| [illegible] | [illegible] |
|---|---|
| 1 - 3 | $141,000 |
| 4 - 9 | $180,000 |
| 10 - 24 | $186,000 |
| 25 - 49 | $202,000 |
| 50 - 99 | $175,000 |
| 100 - 499 | $166,000 |
| 500+ | $348,000 |

Source: Kennedy Research Group, Fitzwilliam, N.H.

## Latin 'net need pushed

Top computer industry honchos urged several hundred Latin American information technology executives to use the Internet to improve the way they run their companies.

Executives from Microsoft Corp., Cisco Systems, Inc., Compaq Computer Corp. and Hewlett-Packard Co. told attendees at a Microsoft user's conference in Boca Raton, Fla., that they risk running aground in coming years if they fail to invest in IT.

"The benefits of moving aggressively to put data into a digital format can be quite dramatic," explained Bill Gates, Microsoft's chairman and CEO.

Paper-based information is less valuable than digital information because electronic data is easier to access, understand and analyze, he said.

**Corporate security,** physical and technical, is a **hot profession**. The number of participants in the **American Society for Industrial Security's** professional training program has **grown 30%** per year since 1995. Last year, **740 people** took the exam.

# Poor profit data weakens business

*By Thomas Hoffman*

COST JUSTIFICATION

AS THE CORPORATE controller at Ameron International Corp., Dewey Norton would like to measure the profitability of his company's pipe products and determine which customers most benefit the bottom line.

Problem is, he can't. The $500 million Pasadena, Calif.-based manufacturer has had trouble identifying and installing analysis tools to make those comparisons, Norton said. "Some of our business units can make these measurements on a gross margin basis, but that's as far as it goes," he said.

Norton's company isn't alone. According to a new survey of more than 400 chief financial officers, more than half (57%) said the inability to measure product and customer profitability is the biggest constraint on their businesses (see chart, page 41).

Norton is also an officer at the Financial Executives Institute in Morristown, N.J., which coauthored the study with El Segundo, Calif.-based Computer Sciences Corp.

Norton said one of the biggest roadblocks to measuring profits at Ameron and other companies is that few corporate information technology infrastructures can handle those types of calculations.

"Most of our systems are set up for bookkeeping, not this type of analysis," said Dottie Hayes, internal audit chief at Hewlett-Packard Co. in Palo Alto, Calif.

It takes a lot of work to identify effective tools, clean up legacy data and then install the systems, Hayes said. Not to mention the costs of technology and staff required to put effective data mining/data warehousing systems in place. Companies must calculate the level of burden they are willing to accept to install intelligent query systems, said Craig J. Huffaker,

**Lack of data,** page 41

GREG STEVENSON

CRISIS PLANNING

# Help! My main vendor just went bankrupt

*By Stewart Deck*

WHEN VISIX SOFTWARE, INC. quietly shut down its operations at the end of February, many users of its Galaxy cross-platform development tools didn't know what to do, whom to turn to or where to go for help.

Seeing a supplier shut its doors is always traumatic, particularly if it involves a high-visibility application, experts said. But there are ways of protecting yourself.

After Visix shut down, more than 160 Galaxy users banded together to form a support group and information clearinghouse for source code and support options. The new organization is online at *www.vertexdev.com/cgi-bin/gum.pl.*

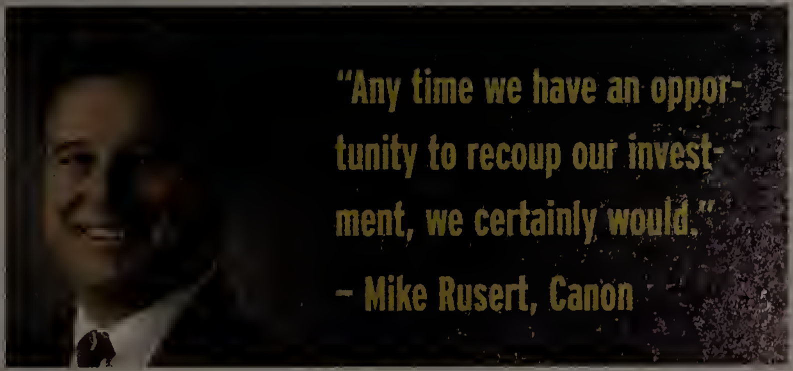
**Visix,** page 41

# Users, vendors pair to sell technology

▸ *But analysts warn against rushing into things*

*By Julia King*

MORE COMPANIES are pairing up with vendors and integrators to sell information systems and their technology know-how in the open market.



"Any time we have an opportunity to recoup our investment, we certainly would."
– Mike Rusert, Canon

Recent examples include St. Louis-based Monsanto Corp.'s partnering with IBM to sell expertise in SAP AG's R/3 software.

Farmland Industries, Inc., a $10 billion agricultural cooperative in Kansas City, Mo., is in a similar relationship. It formed OneSystem LLC, a venture with Ernst & Young LLP to sell R/3 skills in the process industry.

Other companies are marketing software-based tools and methodologies they used to develop systems. Users enter into such alliances hoping to recoup a portion of their software development and implementation costs by selling derivative products and services on the open market.

But turning a buck on newly developed technologies without eroding the competitive advantage for which they were built is a tricky proposition for even the most savvy user company.

"It's one of those things that falls into the category of sleeping with the enemy, [because] you're collaborating with people that could be competitors," said Laraine Segil, president of Lared Group, a Los Angeles-based consultancy.

One common mistake companies make is rushing into alliances before identifying what they should and should not share with a vendor partner or anyone else. A food manufacturer, for example, wouldn't want to include recipe data as part of marketing its software process for assembling a bill of materials.

"Knowing what you do and don't want to share requires a detailed analysis, which most companies don't do," Segil said.

Defining potential customers

**Pairing,** page 41

"TODAY'S CIO...
IS TOMORROW'S CEO"
-DR. JAMES MARTIN

cci
Turning
Information
Into
Knowledge

*Start Preparing Today...*

Absolutely **FREE***

6801 Jericho Turnpike
Syosset, New York 11791
tel: 516 921.5170
fax: 516 921.6134
email: info@compchannel.com

See our website for a complete
list of product offerings:
www.compchannel.com

*Call Today*

**IT&The 21st Century Corporation**
-*On CDROM or VHS*

*featuring*

**DR. JAMES MARTIN**

and receive the Bonus program

**"Technology in Transition: A James Martin Perspective"**

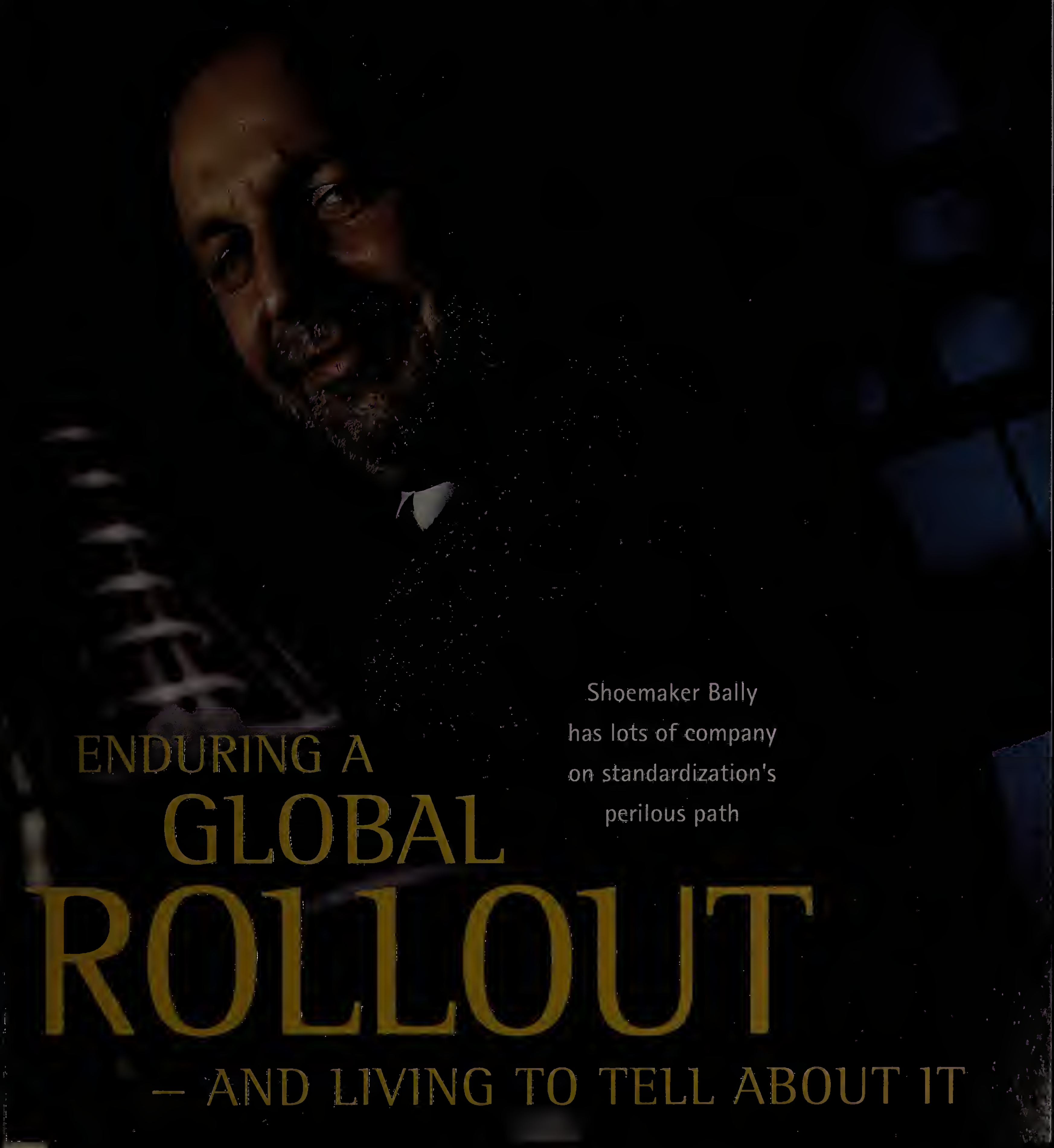
Absolutely **FREE***

**800.304.1425**

**While supplies last*

GLOBAL INNOVATORS SERIES

COMPUTERWORLD
April 6, 1998



# ENDURING A GLOBAL ROLLOUT – AND LIVING TO TELL ABOUT IT

Shoemaker Bally
has lots of company
on standardization's
perilous path

e-business

IS THERE MORE TO JAVA THAN COFFEE JOKES?

Two years ago, the introduction of Java™ software created a whirlwind of excitement and an explosion of coffee-oriented puns. Was it all hype?

At IBM, we think Java is worthy of the stir it created. An idea that brings two benefits to businesses wishing to become e-businesses: one is faster application

[illegible]

development, the other is the promise of standards and open connectivity.

Perhaps the most profound change that the Web has brought to the IT world is a culture of standards. It's this capability that permits universal connectivity and has allowed 80-million-plus people to access the Web. Java is the first language that allows a single application to run on any platform (write once, run anywhere™).

This can speed the application development process – since you don't have to create a different version of your software for every client, every server and every browser. And since most business environments contain a wide variety of computing platforms, Java is just common sense. So is the idea of 100% Pure Java™– a Java that is not corrupted by offshoots and OS dependencies. (We support Sun™ on this issue.)

Is Java perfect? No. Not yet. Like any new technology, it needs refinement. But it's maturing faster than any other language in history and IBM is working to make it real. Currently, we have more people working on Java than any other company – creating real-world applications in finance, manufacturing and distribution (to name a few). And we're putting Java to work to solve real business problems.

We're also creating award-winning tools like VisualAge® software and Lotus Bean Machine.™ These are powerful, flexible programming tools that make it easier for all kinds of companies to build customized solutions (everything from interactive customer service Web sites to collaborative intranets).

To learn more about how IBM and Java can help your business become an e-business (and enjoy one or two fresh coffee puns), we invite you to check out our Web site at www.ibm.com/java or call us at 1 800 IBM 7080, ext. NC39.

IBM®

Solutions for a small planet™

# Thin is in For This Freight-Forwarding Company

SWITZERLAND-BASED PANALPINA CONVERTS TWO-THIRDS OF ITS USERS OFF PCs AND ONTO THIN CLIENTS

BY RON CONDON

If the movement toward thin-client computing ever wanted someone to lead a promotion campaign, it need look no further than Andrew Tidd, information technology manager in the UK at $3.2 billion (U.S.), Switzerland-based freight-forwarding company Panalpina World Transport Ltd.

In the name of saving money and halting extensive travel for his staff of three, Tidd has spent the past year converting 100 users in eight UK offices to thin-client desktops, with another 45 expected soon.

Tidd's evangelical zeal has infected the rest of his organization, which has embarked on implementing a thin-client strategy in 66 countries around the world. When finished, two-thirds of Panalpina's 9,500 employees will be operating from Wyse Technology, Inc. Winterm terminals, without a hard or floppy disk in sight.

Tidd has every reason to be pleased. His department is responsible for supporting 200 users at ports and airports around the UK. Most of the work is simple data entry, logging the arrival or departure of freight shipment and handling associated paperwork.

Just a few years back, each of those offices depended on its own local IBM System/36, leaving the central IT department to rush around the country providing assistance when PCs needed upgrading or when systems broke down. Sometimes the errors were self-inflicted, such as when someone introduced a virus by loading a game from a floppy disk.

## THE FIRST STEP

A move to IBM RS/6000s, located in the head office near London's Heathrow Airport and accessed over leased lines by remote PCs and dumb terminals, was supposed to solve much of the management problem. But with users wanting to load up their desktop systems with legitimate software such as Microsoft Corp.'s Office — and less legitimate games — Tidd and his team still had a management headache.

The situation improved marginally when the company installed Microsoft's Systems Management Server (SMS) on Windows NT servers to electronically distribute software to users' PCs and audit their hardware and software. IT staffers could also monitor network traffic and perform remote diagnostics.

But that still left the task of regularly upgrading PCs to handle new software and warding off the ever-present danger of introducing viruses through floppy disks.

"The company was no longer willing to spend money upgrading memory and disks on the PCs. And even

ANDREW TIDD SAYS PANALPINA'S CONVERSION TO THIN-CLIENT PCs 'HAS CERTAINLY SOLVED OUR PROBLEMS'

PHOTOGRAPH BY MARK HARRISON

with SMS, the team was still stretched to control the PCs out there in the user population," Tidd said.

## BUYING INTO IT

Then came his moment of conversion: "In December 1996, Data General Corp. showed us the WinFrame software from Citrix. It seemed as if this was the future," he said.

WinFrame is an extension to Windows NT from Citrix Systems, Inc. that allows multiple concurrent users to run applications in separate, protected sessions on a single server. It allows the use of thin clients because all of the processing happens on the server, with only keystrokes, mouse clicks and screen updates traveling on the network between client and server.

Tidd also looked at two similar packages, Wincenter from Network Computing Devices, Inc. and NTrigue from Insignia Solutions, Inc. "The only reason for choosing Wincenter or NTrigue would have been if we were using X Windows," Tidd said. X Window System is the graphical user interface for Unix systems, which incidentally Citrix now plans to support through its Picasso project, which will allow non-Windows clients to work with Windows NT Server 4.0.

Before going for the Wyse Winterm, Tidd looked at client devices from IBM and Neoware Systems, Inc. in King of Prussia, Pa. "It uses very little bandwidth, since all it is sending down the line is a bitmap image. All the processing is done on the server."

But Tidd is clear that the thin client is not a universal solution. "It is only a 95% fit for everyone's needs. You still need PCs for people doing large spreadsheets or PC-based presentations," he said.

As with every new convert, Tidd's faith has suffered the odd moment of uncertainty, especially when the Citrix stock price plunged to $15 in February 1997. "It was a worrying time for us. But I was proved right because Microsoft has now endorsed it."

The Citrix stock price is now back up above $40, and Tidd said he can measure instant savings. "We have saved three or four staff in the IT department and have just three people to run 450 devices across the UK and Ireland."

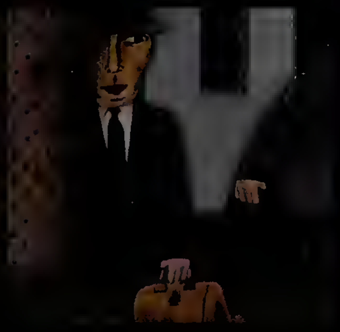
More than that, there will be no more upgrades in the field for the Wyse users. It is true that the servers (NT-based Aviion servers from DG) have to be quite powerful to support the multiple users — about 8M bytes of memory per user — but Tidd insisted that the thin-client model becomes economic at about 27 to 30 users. "Any users above 30 is all profit," he said.

The rest of the company has been closely watching the project, and Panalpina has decided to replicate the idea across the company worldwide. "It has certainly solved our problems," Tidd said.

---

CONDON IS A FREELANCE WRITER IN LONDON.

# INSIDE THIS ISSUE

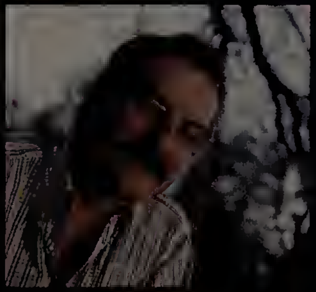


6
world view
SPOTLIGHT ON INDIA:
A MAJOR EXPORTER TURNS INWARD
by uday lal lekshman pai

ENDURING A GLOBAL ROLLOUT — AND LIVING TO TELL ABOUT IT
Shoe manufacturer Bally and an increasing number of multinationals are climbing the rocky path to worldwide software standardization

GETTING EVERYONE ON THE SAME PAGE

ONE OF A KIND — OR NOT



16
innovation in action
TUPPERWARE BRINGS ACCURATE FORECASTS TO THE PARTY
A data warehouse system in Europe improves inventory management by 20%, sparking interest in Mexico, Canada and the Far East
by ron condon

COMPUTERWORLD GLOBAL INNOVATORS STAFF
Magazines Editor: Alan Alper; Executive Editor: Mary Brandel; Designer: Nancy [illegible]a; Managing Editor: Kimberlee A. Smith; Research Manager: Bob Fink, Managing Editor, IDG News Service: Elizabeth Heichler; Contributing Writers: Simon Bragg, Ron Condon; Clare Haney, Elisabeth Horwitt, Uday Lal Lekshman Pai; Production Coordinator: Beverly Wolff, Desktop Publishing Coordinator: Kim [illegible]; Computerworld Editor: Paul Gillin; Cover Photograph: Mark Harrison

# A Major Exporter Turns Inward

INDIA HAS PROVED ITSELF A MAJOR EXPORTER OF SOFTWARE TALENT. THE MILLION-DOLLAR QUESTION IS WHETHER RECENT GOVERNMENT INITIATIVES WILL PAY OFF DOMESTICALLY.

BY UDAY LAL LEKSHMAN PAI

The Indian software industry seems poised for good times. The country is opening the Internet for private Internet service providers (ISP); it enjoys healthy growth in the telecom sector; and it benefits from lavish global spending on Year 2000 and European Currency Unit work. Not a single week passes without a major U.S. technology company establishing subsidiaries or joint ventures for software development and design centers in India.

The big question is whether India can put these opportunities to domestic use.

The real growth of any industry comes through high domestic demand. Yet while India's software exports have been growing at 55% during the past five years, compared with a world average of 20%, its domestically manufactured software and imports are growing at just 48.9%. And while the country holds a 16.7% share in the global software industry, its share dips to an extremely negligible .05% in terms of producing products and packages.

A lack of adequate computerization is one factor contributing to this relatively weak domestic software industry. While India's PC population is growing at about 40% annually, it was only 1.8 million in 1996-97 — one third the number of PCs in New York alone.

Also, according to one industry analyst, Indian software firms don't have the capacity to develop and market entire products. While India is strong in engineering skills, it is less adept in marketing. And unlike in the U.S., where the product business is driven by entrepreneurs and venture capitalists, in India venture finance is hardly available. India also suffers from a lack of market intelligence.

Many other sectors in the country have not been able to keep pace with software growth. Lack of power, highways, telecom systems, housing and international airports at some cities has become a big constraint. Industry observers feel there is an immediate need to set up a high-speed digital communications backbone to increase the use of PCs, the Internet and software.

Piracy, which is estimated at 60%, poses another threat. And competition from countries such as Malaysia, Singapore, Taiwan and China is a reality now.

The good news is the Indian government has identified software as a priority for development in the domestic sector. For instance, it has amended Indian copyright law to make it one of the toughest in the world; there is no import duty on software; and it has exempted profits derived from software exports from the purview of income tax.

Of course, bureaucratic policies and procedures still stand in the way. For instance, a minister in Kerala (a 100%-literate Indian state) refused to sign a computer printout of a letter and ordered it retyped on a typewriter. He felt computerization would lead to unemployment.

But India enjoys an advantage over some other nations trying to promote software exports: It has the world's second-largest pool of scientific manpower that is also English-speaking. Though the country is not fully developed in terms of infrastructure, most Indian companies use state-of-the-art technologies, including Java, computer-aided software engineering tools, object-oriented programming, graphical user interface, client networking, fourth-generation language and much more.

One more silver lining is that the government has ended a state monopoly on the 'net. In September, the cabinet ruled that private ISPs could set up services in the country. The final policy will be ready soon.

The entire industry is betting that when that happens, things will change. The prospect of being allowed to host information in India will be a boon for software developers — mostly small start-ups and those in the Web design and hosting business.

ILLUSTRATION BY LARRY GOODE

---

PAI IS A SENIOR JOURNALIST IN INDIA. HE HAS CONTRIBUTED TO PUBLICATIONS SUCH AS *UPSIDE* AND *THE WORLD PAPER*.

## MILLENNIUM THREAT

WHICH COUNTRY is senior management most cognizant of the implications of the Year 2000 problem? According to a recent study, the U.S. leads, with 71% of IT managers saying their senior managers fully understand the millennium issue.

| | |
|---|---|
| U.S. | 71% |
| Scandinavia | 60% |
| UK and Ireland | 55% |
| Asia | 54% |
| Continental Europe | 49% |

Source: PA Consulting, London

## EURO DEADLINE

MORE THAN THE YEAR 2000 PROBLEM, European companies seem to be concentrating on the conversion to a single currency, dubbed "the euro." The companies also reported less confidence in meeting euro compliance than the Year 2000 deadline. As a result, the millennium problem is taking a backseat to the euro, which could mean trouble for overseas companies depending on European companies to maintain their supply chains.

Source: [illegible]man Bond Associates, a British consulting firm
[illegible] IT managers and 254 finance directors at European companies

## NET ATTRACTION

Number of European companies that used the Internet for business-to-business electronic commerce, 1997: 600

Number in 2000: 64,000

Number of U.S. companies that used the Internet for business-to-business electronic commerce, 1997: 1,600

Number in 2000: 173,000

Source: Datamonitor, a global market research consultancy
(www.datamonitor.com)

## CHINA BOOM

China's Internet population is expected to grow from about 300,000 users today to 3 million to 4 million by 2000, according to China Telecom. AT&T recently signed a deal with China Telecom to help boost the country's Internet link to the rest of the world.

## THE RACE IS ON

In its second annual Information Society Index, International Data Corp. and World Times, Inc. ranked the 55 countries that account for more than 99% of IT expenditures annually. Scores are based on 20 variables within the countries' information, computer and social infrastructures. Here are some highlights:

THE U.S. maintained its No. 1 spot. IT growth will continue, fueled by strong software and IT services sectors.

EUROPE splits into three subregions. Northern Europe, particularly the Scandinavian countries, lags behind the U.S. by only a year or so. Central Europe, including Germany and France, is struggling to overcome economic softness, trailing the U.S. by two to three years. Southern European countries, including Italy, Spain and Greece, lag behind the U.S. by three to 10 years. Increased investments in computer and information infrastructures are paying off. Telecom privatization is having a positive impact on information infrastructure scores. Continued investment in this area is Europe's best competitive chance.

ASIA: Ten of the 14 most rapidly advancing information societies were Asian, prior to the economic tsunami that hit the region last fall. This bodes well for Asia's ability to move forward once it gets its economic house in order. Japan scored better in this year's index, due mainly to heavy PC investment.

LATIN AMERICA showed good progress, especially in computer infrastructure. Mexico and Brazil had some of the largest year-on-year growths in the world.

Source: 1998 IDC/World Times Information Society Index

## MANUFACTURING INVESTMENT

MANUFACTURERS AROUND THE WORLD will continue to invest strongly in ERP systems in the next five years, according to a recent study. Asia's spending growth will outstrip the rest of the world.

WORLDWIDE END-USER EXPENDITURES ON ERP
SOFTWARE AND SERVICES BY MANUFACTURERS

| Europe/Middle East/Africa | |
|---|---|
| 1998 | $2.2B |
| 2002 | $4B |

| Americas | |
|---|---|
| 1998 | $2.9B |
| 2002 | $5.5B |

| Asia Pacific | |
|---|---|
| 1998 | $1.3B |
| 2002 | $4.6B |

Source: Ovum Inc.

# ENDURIN
# ROL
## — AND LIVIN

WOLFGANG HERMLE: WITH STANDARDIZED ACCOUNTS, MANAGERS AT BALLY CAN NOW COMPARE PROFITS AND LOSSES ACROSS THE ENTIRE COMPANY

What's one good way to really get to know your international peers? Stage a global rollout of a software system. Just ask the worldwide managers at Digital Equipment Corp. The company is implementing a standardized human resources system in 44 locations worldwide. At each new stage of the project, managers from human resources and information technology units from around the world gathered in the same room for a week, hammering out a set of business practices that would be consistent across their respective business units.

While all-out arguments were rare, "it took a lot of cycles and patience to work through the specific details" of how PeopleSoft, Inc.'s Human Resource Management System would function across business units in dozens of countries, reported David Landry, Digital's worldwide human resources information manager. "Everybody thinks their needs are unique. So you have a compromise discussion to get everybody to move from different legacy environments to an enterprise application where there is commonality whenever possible."

Managers at Echlin, Inc. are in the same boat. The $3.5 billion automotive parts manufacturer is replacing a hodgepodge of manufacturing and distribution systems in 150 business units worldwide with enterprise resource planning (ERP) applications from Dutch software vendor The Baan Co.

Even though "people are very cognizant of the opportunities and benefits" of the

# G A GLOBAL
# LOUT
# TO TELL ABOUT IT

## Shoe manufacturer Bally and an increasing number of multinationals are climbing the rocky path to worldwide software standardization

### BY ELISABETH HORWITT

project, "it's been challenging to get general consensus" on the implementation, said Bill Tilt, director of enterprise systems at the Branford, Conn., firm. "We have disagreements on what a best practice may be, and people perceive themselves as having a unique set of requirements." In the U.S. alone, for instance, each site has an individual way of handling inventory receipts.

More and more multinational corporations are facing these and other challenges as they roll out standardized human resources, financial and ERP software across the enterprise — and run into political, cultural and technical glitches along the way.

The difficulty of achieving a successful global rollout is "infinitely worse" when a corporation's business units are dispersed worldwide, said Chris Jones, vice president and research director of manufacturing applications at Gartner Group, Inc., a consulting firm in Stamford, Conn.

Consider the range of misunderstandings: While employees at Digital in the U.S. recognize the need to follow local laws, "it's very difficult for them to fully understand data protection legislation" overseas, said Paulette Eschrich, Digital's human resources information manager in Europe. So "some [central] IS people went into a local database to bring data over to do conversion and found out after the fact that they were supposed to have registered with a data protection agency because they'd moved the data across national borders."

But that doesn't stop firms from trying. In the U.S. alone, 1997 saw a record $1 trillion in mergers, many of which involved overseas firms. The newly merged businesses often have little in common beyond a common corporate logo. By implementing a consistent set of business applications, corporations hope to achieve true synergy across national borders and product lines and to present a common face to the world.

"Not only are companies feeling the need to be global, but they are placing much greater strategic value on making sure systems are in place and information available on a global basis," said Tim Ramos, a senior vice president at Cambridge, Mass.-based systems integrator Cambridge Technology Partners, Inc.

A good example is Bally Management Ltd., a Schönenwerd, Switzerland-based shoe manufacturer now rolling out SAP AG financial software to its worldwide sites. Before, each Bally shop calculated profit margins completely differently, depending on the particular financial package it used, said Wolfgang Hermle, Bally's director of international information systems. Now, with standardized, comparable accounts, managers can compare profits and losses across the entire company, enabling managers to pinpoint problems in individual countries all the way down to the shop level.

In the end, Bally expects a return on investment (ROI) for the SAP rollout within a year and a half, Hermle said.

In the manufacturing sector, this type of synergy "goes beyond strategic," Ramos said. "If you can't stock from inventory around the world or have that enterprise information view, you truly won't be competitive."

In addition to strategic value, multinationals are seeing dollar signs. Digital, for example, expects IT-related cost savings to account for much of the 27% ROI it expects to get from its PeopleSoft implementation, according to Eschrich (see story page 14). Part of the savings comes from consolidating suppliers. "Our legacy environment has a wide variety of different systems in 44 different countries," Eschrich said. Once Digital has a standard set of software and vendors in place, "each individual [division] is no longer trying to select a solution or negotiate with a vendor on its own; we can do it at the corporate level."

Of course, Digital's worldwide managers may have to start over if and when Digital becomes part of Compaq Computer Corp., pending Compaq's proposed buyout. But at least Digital will have achieved consistency within its own groups when possible.

*Please turn to page 12*

PHOTOGRAPH BY MARK HARRISON

e-business

BE ONLINE WITH
www.duck.com
POULTRY
EGGS ARE MORE THEN FOOD!
THEY ARE USED IN VAC. PREP. COSMETIC, ANIMAL FEED, PAINTS, SHAMPOO, ADHESIVES
LIFE
KINGS
I. HORVATH
Duck

IBM the e-business logo and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. Other company product and service names may be trademarks or service marks of others. © 1997 IBM Corp.

WHAT'S THE DIFFERENCE BETWEEN A LITTLE KID WITH A WEB SITE AND A MAJOR CORPORATION WITH ONE? NOTHING. THAT'S THE PROBLEM.

Building a publishing-only Web site is the first step to becoming an e-business. A step that most businesses (and a lot of little kids) have already taken. That's fine as far as it goes – it's a very cost-efficient way to distribute basic information.

But the real payoff (for businesses, at least) comes with steps two and three. Step two is moving to "self-service" Web sites – where customers can do things like check the status of an account or trace a package online.

Step three is moving to transaction-based Web sites – not just buying and selling, but all processes that require a dynamic and interactive flow of information.

IBM has already helped thousands of companies use the Web to make the leap from being a business with a Web site to being an e-business – putting their core processes online to improve service, cut costs or to actually sell things.

For example, we helped Charles Schwab Web-enable their brokerage systems for online trading and customer service. Since opening, Schwab's Web service has generated over one million online accounts totaling over $68 billion in assets.

e-business economics are compelling. According to a recent Booz-Allen & Hamilton study, a traditional bank transaction costs $1.07; the same transaction over the Web costs about 1¢. A traditional airline ticket costs $8 to process; an e-ticket costs just $1. Customers love the convenience; management loves the lower costs.

IBM solutions have already helped thousands of businesses become e-businesses. To find out how IBM can help you do the same, bookmark www.ibm.com/e-business or call us today at 1 800 IBM 7080, extension NC32.

IBM®

Solutions for a small planet™

*Continued from page 9*

That's an important distinction. One of the major factors that kept Digital managers in their meeting room was determining which parts of the application could be applied globally and which needed to be tailored to the unique needs of individual business units.

For example, absence tracking is more of an issue in Europe and Asia-Pacific than in the U.S., Landry noted. Human resources staffers had to "work closely together to agree on a common set of requirements."

And consistency is not always a virtue. More often than not, some practices — and the software vehicle that implements them — must be customized to the needs of different sites, countries and product groups.

COMPANIES that don't bite the bullet up front may face expensive after-the-fact customization and re-engineering – or even end up doing the whole thing over from scratch.

For instance, a one-size-fits-all approach will definitely not fly when it comes to Bally's next implementation phase: SAP's Apparel and Footware Solution. The wholesale retail system will require more respect for local business habits, Hermle said. "In the U.S., for example, there is a high degree of EDI usage," he said. "But in Europe, in our industry, EDI is basically not known, and there is no standard format. Also, each country has its own procedures for handling things like invoices and payments."

The SAP software provides a "very industry-specific foundation that we can then customize," Hermle explained. Bally expects the Apparel and Footware rollout to take about two years.

But while application functionality can vary from country to country, it's best for the applications data to be consistent worldwide. This means consolidating and standardizing various types of business-critical data so it can be viewed across business units, geographies and product lines.

"The more kinds of reference data — customer reference codes, supplier codes, part numbers, SKUs — you standardize, the better," said Barry Wilderman, a vice president in application delivery strategies at Meta Group, Inc.

To create a global demand-planning system, for example, Echlin hopes to standardize part numbers to speed production cycles and reduce inventory, Tilt said. "Right now, we have no common marketing system to provide information on demand for a particular part number worldwide."

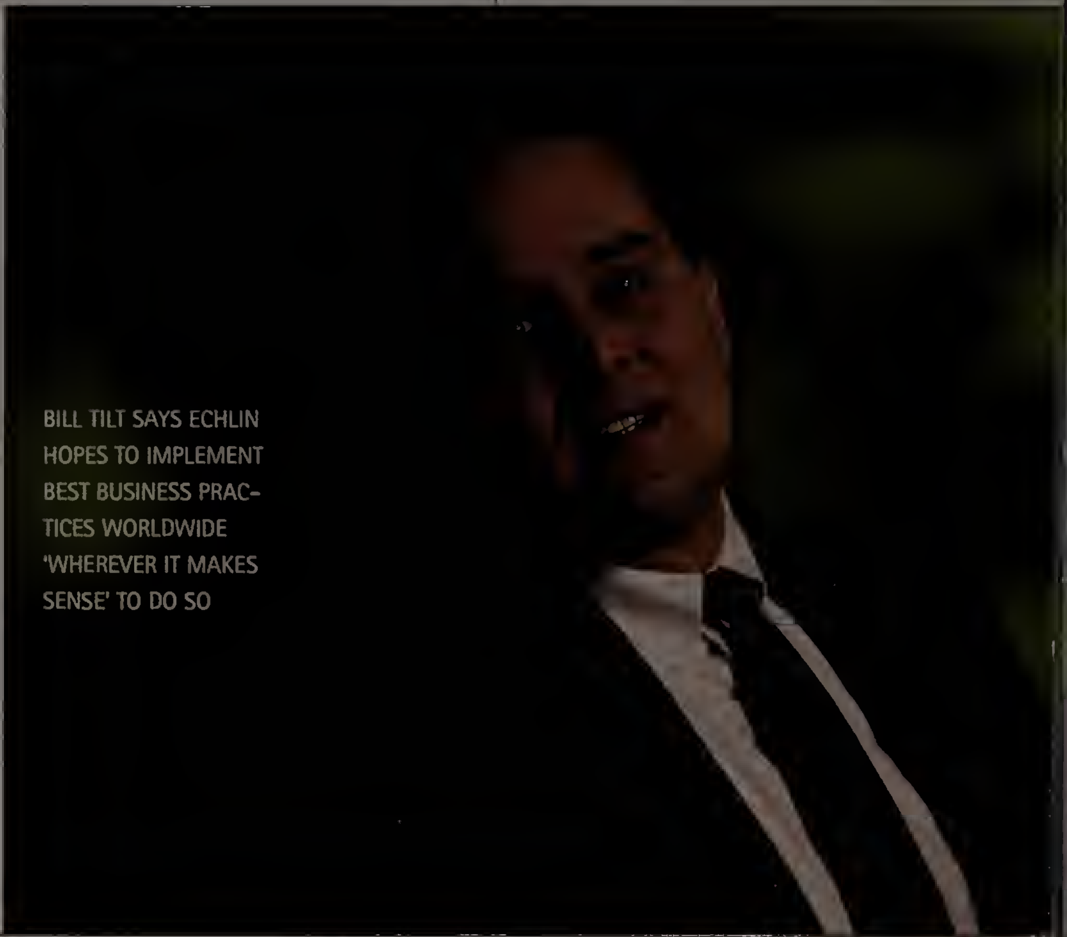
For many companies, consistency is a pretty lofty goal. "Some companies have gazillions of different packages around the world that they aren't going to rip out," Wilderman said. The only solution may be to keep the local codes and set up a data warehouse for central rationalization of part and supplier reference numbers, he said.

These types of issues spell out why it's so crucial for global implementers to copy Digital's example and gather representatives from all the key groups. Of course, getting a dozen or more people physically together can be expensive, analysts warn, especially as teleconferencing or groupware won't do, at least for this crucial first meeting. "I can easily visualize a set of teams that constitute 30 to 50 people working 12 to 18 months for a Fortune 200 or Fortune 300 company," Wilderman said.

Companies that don't bite the bullet up front may face expensive after-the-fact customization and re-engineering — or even end up doing the whole thing over from scratch, Jones said.

"We have seen early implementations where managers bought standard software and thought they'd have a standard enterprise," he said. Unfortunately, an ERP product's range of capabilities, in something like order-to-cash cycle management, may be a high fit with one division, but then the next one has a slightly different supply chain. Those early implementations ended up get-

*Please turn to page 14*



BILL TILT SAYS ECHLIN HOPES TO IMPLEMENT BEST BUSINESS PRACTICES WORLDWIDE 'WHEREVER IT MAKES SENSE' TO DO SO

PHOTOGRAPH BY STELLA JOHNSON

# GETTING EVERYONE ON THE SAME PAGE

BY SIMON BRAGG

Even in a single site, implementing ERP means "Early Retirement Probably." But before rolling out an enterprise resource planning (ERP) system across multiple countries, better check your pension plan.

Global ERP rollouts are not for the faint-hearted, mainly because if you want to transform your business, they demand consistent business processes and consistent data definitions across all business units.

The vendors could offer more help. If you want to create processes that operate across multiple instances of R/3 or Baan on multiple sites, you have problems. Both systems have tools that graphically display business processes. But each works only when you have the hardware next door, although we suspect Baan is working on this issue.

One of your first steps in a global rollout is to define your corporate structure and all the legal entities within it. Getting these decisions right is difficult, and gaining everyone's approval is doubly so, but current systems don't support loose boundaries. This is hard enough for a single site, more so for an international business, yet the corporate structure is difficult to change midway through the implementation. Problems are compounded when the head office acquires or disposes of companies.

People pose another problem. For instance, you decide to change your order-processing system. Your business process re-engineering team envisions your order-taking clerks providing prospective customers with information such as credit-worthiness and estimated delivery date. Technically, it's quite simple these days because order-taking clerks can access this information online in real time.

However, the order takers are low-paid employees who need retraining to become the key players in your business. The finance department won't like the idea of releasing credit-worthiness information to other departments. Manufacturing planning and the technical departments will be up in arms when they discover they will lose half their people, who will at best get reallocated.

These are problems enough in your one pilot site, in your home town. But do you want your subsidiaries to adopt this new process model? They might reply that these processes are inappropriate, as you can't get the people with the skills to handle such orders.

You could centralize your North American and Latin American order-taking operations into the head office. The result: Every manager in every subsidiary would come up with a special case. If purchase and loan problems arise, it's the central system to blame.

Then there's the question of how to approach the project. Companies with enough clout in the head office can develop their new processes back home, then pack off their implementation team around the world with the greeting, "I'm from the head office — I'm here to help you."

Others will take a more collaborative approach, assembling a team composed of stars from each outpost to create their best practice processes — processes that hopefully work everywhere. This can work if the stars can make decisions and sell those decisions back home. But if you're not careful, the team will produce a process equivalent to a Wagnerian opera with Japanese lyrics accompanied by a balalaika orchestra to a heavy samba rhythm for a garage rave — all fine musical forms that may not work together.

Companies that are truly global, perhaps with a global brand name selling to similar segments and people throughout the world, will find this collaborative approach easier.

Remember, you can make these systems fit any process, but you can't easily change the process once implemented. You really do need to get it right the first time.

The secret is, plan global, recruit local. Whatever else, don't award your multinational implementation contract to a single multinational consultancy claiming to offer expertise in every country. ERP implementations are about people, not processes. Create a core head office team, then recruit the consultant expertise you need locally in every country. Check the backgrounds of the individual consultants that will implement in Tuvalu and create a different team for the Beijing rollout.

---

BRAGG IS AN ASSOCIATE AT OVUM, INC., AN INDEPENDENT ANALYST GROUP WITH OFFICES IN BOSTON, LONDON AND MELBOURNE, AUSTRALIA. HE IS ALSO THE AUTHOR OF *OVUM EVALUATES: ERP FOR MANUFACTURERS.* FOR FURTHER INFORMATION, CONTACT OVUM AT INFO@OVUM.COM OR WWW.OVUM.COM.

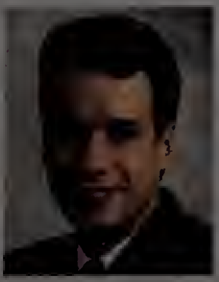


ILLUSTRATION BY LARRY GOODE

*Continued from page 12*

ting ripped out, he said.

Perhaps the most important potential payback of a global software rollout is as a vehicle for implementing consistent best business practices across a company.

That's what Echlin hopes to do, "wherever it makes sense," Tilt said. In the U.S. phase, a 70-person, largely domestic team is spending six or seven months defining those best practices. Baan then provides software to model the practice and implement it in specific Baan applications.

During the worldwide implementation, "we don't expect much challenge to what we've done," Tilt said. "By going after leading best business practices, we'll make acceptance by other operations much easier."

## BEST OF BOTH WORLDS

Echlin is actually treating Baan implementations at different geographic areas — the U.S., the UK, Mexico, South America and Europe — as "different projects, different venues," Tilt said. "We call it the localization component," customizing software to adhere to "current covenents and government statutes in each country."

SAP, along with other leading global ERP and financial vendors, provides customization tools. Sources differed as to just how difficult and time-consuming that process is. The main thing is not to find yourself customizing in the middle of the rollout, Jones emphasized.

"The challenge is how to get the best of both worlds," Ramos said. On one hand, you want the common processes and therefore information consistency that allow you to look like a global company and make decisions on a global basis. On the other, he added, you don't want your systems to become so homogenized that you lose your competitive advantage in local regions.

In the end, a well-run planning phase is well worth the trouble, implementers report. If most conflicts happen early on, the local representatives — now thoroughly invested in the project — become advocates for the new process, Wilderman said. "Then they can go back and help local folks understand why they made these decisions."

---

HORWITT IS A FREELANCE WRITER IN WABAN, MASS.

# FRUITFUL FUSION

For many companies, a global software rollout is a good time to do some serious housecleaning and consolidation of their IT infrastructure around the world.

For example, Bally's SAP implementation has forced its IT group to figure out how to best manage the whole networking environment, "which is basically global but needs to support local performance," said Wolfgang Hermle, director of international IS at the Swiss shoemaker.

Among the questions: Where do you put the servers — one in the U.S. and one in Europe? Or do you put one corporate database server and one application server running locally at each site? Bally's IT staff has already begun conducting simulations to figure out the best response.

For its part, Echlin has decided to implement consistent systems underneath its worldwide Baan system, said Bill Tilt, the automotive manufacturer's director of enterprise systems. "We wanted to achieve the benefits of pricing, technical support and testing you get from a common set of platforms," he said. Because the company has expanded via acquisitions over the years and is very heterogeneous now, it will take several years to achieve the migration.

Digital's PeopleSoft rollout is part of an overarching global standardization strategy, which also includes moving to a common architecture and infrastructure, said Paulette Eschrich, human resources information manager at Digital. Unfortunately, the more automated sites may "have to take a loss in efficiency locally in order for us to gain overall efficiency at the corporate level, and this has produced resistance," she said.

Much easier is the task of implementing the software at some Digital divisions in Asia-Pacific, Latin America and Eastern Europe that have been doing their work either manually or with rudimentary spreadsheets, she added.

On the other hand, IT must ensure that a global business system initially designed for major business sites gets scaled down to meet the needs of smaller, third-world divisions, said Chris Jones, vice president and research director of manufacturing applications at Gartner Group. "A $5 billion U.S. business with multiple plants [can] absorb the costs of a big system. But take that configuration to a $30M business in Brazil, and the local business manager will tell you to take a hike."

Some major ERP software products simply do not scale down to the small business, Jones said. One possible solution: "Reorganize your company on a worldwide global business unit level, not just a country business level," so that cost justification can be spread out across a region, Jones suggested.

— ELISABETH HORWITT

ILLUSTRATION BY LARRY GOODE

## CASE STUDY: ORIENT OVERSEAS CONTAINER LINE LTD.

# ONE OF A KIND — OR NOT?

### USING SAP'S CANNED BUSINESS PROCESSES, A GLOBAL SHIPPING FIRM SAVES TIME, MONEY BY SKIPPING CUSTOMIZATION

BY CLARE HANEY

Everyone likes to think they're unique. But as Hong Kong-based Orient Overseas Container Line Ltd. (OOCL) discovered last year, it sometimes pays to conform.

OOCL, a subsidiary of public company Orient Overseas International Ltd., is one of the world's leading global container transportation companies, with 144 offices in more than 45 countries. The shipping giant owns and charters about 34 container vessels deployed in 41 liner services.

In an overall corporate move to client/server systems in 1994, OOCL opted to install eight modules of SAP AG's R/3 financial system. So far, five of these modules are up and running on Hewlett-Packard Co. HP-UX servers and Oracle Corp. databases. OOCL expects it will take two years to complete the rollout, which will serve 280 accountants worldwide who all report to the Hong Kong headquarters.

"I used to tell my friends that the shipping industry was very complex," said Paul Mok, general manager of finance and accounts at OOCL. Consider a single customer request to ship cargo from one country to another. The client can choose the currency and country in which to pay the bill, as well as which party will pay — the shipper or the consignee.

Given such a scenario, OOCL said it believed it would require a very robust and integrated financial system. However, Mok said, "SAP has spent billions of U.S. dollars researching their accountancy model. We said to ourselves, 'Let's change our requirements to suit SAP modules.' "

Not to mention, the company found R/3 to be a "very rigid system," Mok said. "We understood that a lot of customization would mean a lot of trouble, and the costs would be very high" — above and beyond the several million U.S. dollars the implementation has already cost.

### STATE OF MIND

As it turned out, this wasn't such a struggle because, according to Mok, the company already had a process re-engineering mind-set. "We started process re-engineering six to seven years ago prior to implementing R/3," he said. "At that time, our accounting function here in Hong Kong employed more than 100 staff. With process re-engineering, the head count was reduced to 70."

All the implementations of the R/3 financial modules began at OOCL's Hong Kong headquarters. From there, the company rolled out the system country by country, module by module to its overseas offices.

Although different countries did have their own special accounting needs — for example, Europe, with its value-added tax requirements — OOCL was attempting to build "a standardized global accounting model for OOCL as a whole, not for one country," Mok explained. "It was very important that we come up with consensus and compromise."

To achieve this, the company tried to identify what Mok called a "benevolent dictator" for each R/3 financials module. This was an individual with plenty of expertise on a particular module. This person would first consult with the various users but ultimately be the "system owner" when it came to signing off on and implementing a module.

### BIGGEST CHALLENGE

The most difficult part of the implementation was the design phase, when OOCL invited some representatives from its offices in North America and Europe to come to Hong Kong to participate in the decision-making processes. The company also brought in Price Waterhouse Hong Kong as a project consultant and used that organization's Project Management Methodology to document the whole design process.

OOCL has considered extending its R/3 investment to include SAP's human resources modules, but "it's too expensive compared with other alternatives [in the market]," Mok said.

HANEY IS HONG KONG BUREAU CHIEF FOR THE IDG NEWS SERVICE.

## INNOVATION IN ACTION

# Tupperware Brings Accurate Forecasts to the Party

A DATA WAREHOUSE SYSTEM IN EUROPE IMPROVES INVENTORY MANAGEMENT BY 20%, SPARKING INTEREST IN MEXICO, CANADA AND THE FAR EAST.

BY RON CONDON

Say Tupperware to practically anyone in the developed world, and they will know what you mean. Most of us have packed our food in one of the company's plastic boxes at some time in our lives. And most of us know Tupperware Corp. works solely through direct sales, having pioneered the idea of the party demo, where an agent persuades someone to host a small gathering in her home.

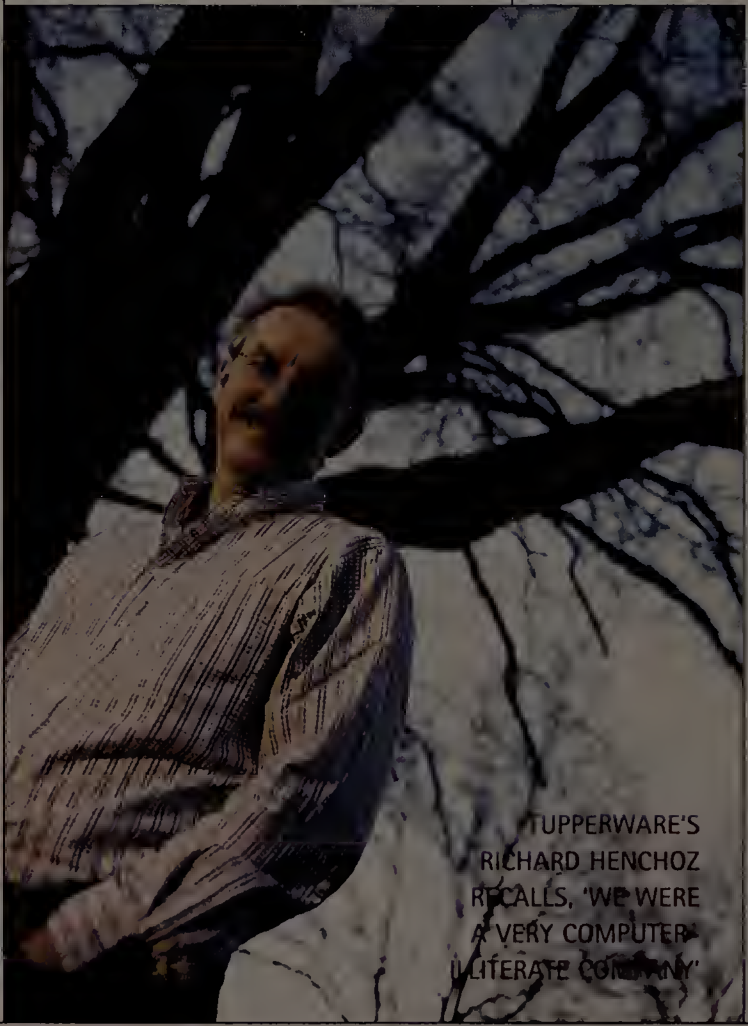
In this domestic atmosphere, products are demonstrated, people place their orders, and the host gets some kind of commission prize for holding the party. It is a simple formula that has allowed Tupperware to grow to a multinational corporation operating in more than 100 countries and with annual revenue of $1.4 billion in 1996.

But not so long ago, according to Richard Henchoz, marketing services director at Tupperware in Europe, the Middle East and Africa, the company's information management was failing to keep up with the business. "As the business grows, then 5% or 10% forecasting errors get bigger as well. They can cause a big drag on the business."

In reality, forecasting errors were often far worse and were symptomatic of a deeper problem that the European organization has spent four years trying to tackle.

The core problem was that although the company collected masses of data and statistics, it had a difficult time deriving any real data about who was selling what, where. When Henchoz joined five years ago from The Procter & Gamble Co., inflexible programs cranked out company reports on IBM System/36s. "If you needed to know something different, you had to get a programmer to write you a new program," he said.

A move to IBM AS/400s failed to take advantage of the systems' file-handling properties. "We made the classic mistake of transferring all the old files from the old systems to the new. So there was little advantage. We were a very computer-illiterate company in those days," Henchoz recalled.



TUPPERWARE'S RICHARD HENCHOZ RECALLS, 'WE WERE A VERY COMPUTER-ILLITERATE COMPANY'

PHOTOGRAPH BY MARK HARRISON

The effect was that getting hold of the right data was slow and difficult. "It took so long to get the information we needed, and there were so many errors in the data," he said. "Everyone had their own little database, which they'd built up in their own way. Half the time, you could never discuss on a rational basis what the real facts were because everybody had different views."

Today, Tupperware is very close to solving its forecasting woes and saving millions a year in inventory. Using a system based on an online analytical processing (OLAP) database, 200 European managers now have accurate sales and product performance data, are piloting a forecasting system and can better manage sales promotions.

The first step was to find a system that everyone could use — one with an easy graphical interface that could be deployed across Europe.

But some basic work had to be done. A project team of both users and technical staffers began working with a consultancy to map out information needs and process flows. The study took place in two countries and was later tested in two other countries to see if the results were true for all regions, which they were.

The results of this nine-month study were alarming. Tupperware discovered there were product management people who never saw product information. And in some cases, the same piece of information was entered seven different times in different databases.

"It was a ridiculous waste of effort and time," Henchoz said. "The guys at the top had all the information; the guys at the bottom had nothing."

### NARROWING IT DOWN

Only after this preliminary work could Henchoz's staffers start looking for a system to support the new business model. They ended up with a shortlist of two data warehousing approaches: Intelligent Environments, which the U.S. end of Tupperware was planning to use to build a similar system, and a small London-based software house called European Management Systems (EMS). EMS had produced its own Windows-based OLAP database called Eureka and built all of its applications code using Microsoft Corp.'s Visual Basic.

The winner was EMS — just a three-person company at the time. The clincher was the demo: the vendor had loaded Tupperware data into a demonstration database and allowed Henchoz to play with the information. "That was the first time I saw slice and dice," he said. "It had a good graphical interface, it was very easy to use, and it allowed us to proceed in small stages rather than go for the big-bang approach."

A pilot project team worked with EMS to build a pilot sales management module that would collate all the weekly details of who had sold what at parties. This was then installed in a single country for testing and, after some amendments, was rolled out across the main economies of Europe.

## TUPPERWARE EUROPE, AFRICA, MIDDLE EAST

| | |
|---|---|
| **HEADQUARTERS:** | Geneva |
| **PROBLEM:** | Poor forecasting, inaccurate product data |
| **SOLUTION:** | Distributors upload weekly data to an AS/400 in each country. ASCII files are then sent to a PC-based OLAP system in each country. |

> TUPPERWARE'S product management module "is proving to be a real hit with product managers, who have statistics for the first time."
> RICHARD HENCHOZ, TUPPERWARE

Independent regional distributors collate sales data from demos weekly and upload it via modem to an AS/400 in each country. ASCII files are then sent from the operational system to a PC-based network in each country running the Eureka database and applications. Figures for the whole region are also consolidated at headquarters.

During the past three years, Tupperware has added a product management module to rank how individual products are selling. "That is proving to be a real hit with product managers, who have statistics for the first time," Henchoz said. This module feeds off the same Eureka database and allows the managers to see which products are selling well and analyze sales by size and color.

And now, with good access to both sales and product performance, Tupperware managers have begun using the system for forecasting, basing predictions on the previous two years' performance. EMS embedded the ForecastPro engine from Business Forecasting Systems, Inc. in Boston into the system, and although it is a little early to judge the effectiveness of the process, in pilot the forecasting improved inventory management by about 20%, according to Henchoz.

"If this turns out to be true in practice, then we stand to save $40 million to $60 million a year in inventory," he said.

The latest module aims to record and predict how well sales promotions work. "This will be a major step forward for us in promotions management. Half the time, we have no idea how effective a promotion has been," Henchoz said.

The resultant system is a series of interlocking applications modules built around the Eureka OLAP database, with links to a Microsoft Access database for static data.

"This business can be difficult to predict," Henchoz said. "If it snows, half the people won't turn up for the presentation. A promotion may do really well, or it may fail badly. The sooner we know these things, the better we can manage the business."

Equally, a country manager can instantly see which distributors or demonstrators have broken performance records, and they can call them up immediately to inform and congratulate them.

The system is likely to be adopted soon by Mexico, Canada and five countries in the Far East. The U.S. is also considering whether to adopt the same system.

CONDON IS A FREELANCE WRITER IN LONDON.

Copyright 1998 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on 35mm microfilm through University Microfilm Int. Periodical entry Dept. 300 Zeeb Road, Ann Arbor, Mich., 48106. Photocopy rights: Permission to photocopy for internal or personal use or the internal or personal use of specific clients is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center, provided that the base fee of $3 per copy of the article, plus 50 cents per page, is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, Mass. 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Michelle Olk (800) 217-7874. For subscriptions to Computerworld, call toll-free (800) 669-1002. Subscription rates: U.S. - $48 a year; Canada, Central and So. America - $150 a year; Europe and all other countries - $295 a year (airmail service). Back issues may be purchased by calling toll-free (800) 343-6474 for pricing and availability.

e-business

IBM, the e-business logo and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. © 1997 IBM Corp.

# HOW TO KEEP A SECRET.

In transforming your business into an e-business, the single most important issue you have to wrestle with is the issue of security.

Without flexible control over who sees what information, all the benefits of putting your key business processes online (which is, after all, the definition of an e-business) are a moot point. And when you connect your critical systems to the Web to help you improve customer service or increase the efficiency of your organization – security is a white-knuckle issue for the people charged with keeping your systems running and your data protected.

It's not just a matter of whom you let in and whom you keep out (although that is obviously important). When you're using the Web (or an intranet) to do things like let your employees change the asset allocation of their 401(k) accounts or let your customers see what their credit balance is, you need the ability to determine who sees what and who can make changes to what they see.

IBM e-business solutions can help you manage access to the really important information you make available online. We've spent over three decades protecting the integrity of corporate information systems. We've pioneered things like Realtime Intrusion Detection, Anti Virus Labs, and Emergency Response Services. And we've made security an integral part of IBM e-business technology – so you can build Web sites that know how to keep a secret.

To keep up with the latest IBM security solutions for e-business, bookmark www.ibm.com/e-business. Or call us at 1 800 426 7080, extension NC31.

IBM®

Solutions for a small planet™

e-business

YOUR COMPETITORS ARE READY FOR E-BUSINESS.
(ARE YOU?)

www.ibm.com/e-business

IBM
Solutions for a small planet™

IBM, the e-business logo and Solutions for a small planet are trademarks of International Business Machines Corporation in the United States and/or other countries. © 1997 IBM Corp.

# Lack of data hurts business

CONTINUED FROM PAGE 39

chief financial officer at Transcrypt International, Inc., a Lincoln, Neb.-based maker of data security devices for cellular telephones and PCs.

Because some data warehouses can cost millions of dollars to install, "there's eventually a point of diminishing returns" on systems, whose financial payback is limited, Huffaker said.

**ROI ELUSIVE**

The study also concluded that CFOs have a tough time measuring return on investment (ROI) for technology projects, whether from a business/financial standpoint or in terms of productivity gains. Finance executives "rarely go back and try to remeasure technology returns on their businesses" because they are so hard to place a dollar value on, Norton said.

Some gains are easier to measure than others, he said. Those include improved response times on customer service calls following customer information systems upgrades.

Other big-ticket IT investments, such as enterprise resource planning (ERP) systems, often deliver "soft" returns, such as improved cost controls, said Raghavan Rajaji, senior vice president and CFO at BancTec, Inc., a Dallas financial services systems integrator.

Next month, BancTec will finish rolling out a $15 million to $20 million SAP America, Inc. ERP system to its 4,000 employees worldwide. Rajaji said he expects the system to improve communications among business units and provide the company better control over its balance sheet.

The mistake some CFOs make, Rajaji said, is pinning IS managers to ROI on all types of technology investments, including fundamental infrastructure spending.

"A technology infrastructure is required just to be in business," Rajaji said, whereas a big ERP system "has to be justified on its own merits." □

**Five areas in which companies are constrained by a lack of enabling technology:**

| | |
|---|---|
| Measuring product and customer profitability | 56.8% |
| Reducing companywide operating costs | 52.9% |
| Moving from record keeper to strategic advisor | 50.2% |
| Positioning the company for profitable growth | 43.2% |
| Developing effective cost management methods | 41.5% |

Base: 417 chief financial officers

Source: The First Annual Survey of Technology Issues for Financial Executives 1998, Financial Executives Institute, Morristown, N.J., and Computer Sciences Corp., El Segundo, Calif.

# Visix takes away Galaxy

CONTINUED FROM PAGE 39

But there are plenty of options other than self-help. "I always advise people to do some crisis planning and figure out before anything happens just what their response will be if they're left in the lurch," said Bill Wohl, communications director at DecisionOne Corp., a computer maintenance and technology services provider in Frazer, Pa.

"This kind of event doesn't happen often in this business, but it does happen," Wohl said. Last summer, for example, customers and employees were left in the dark and unprepared when software maker WebMate Technologies, Inc. in Canton, Mass., went out of business.

**LEGALLY SPEAKING**

A customer always has a monetary claim on a vendor, even one that applies for Chapter 7 liquidation — in which the filer gets to decide distribution of its assets — or for court-supervised asset distribution under Chapter 11 bankruptcy, said Saul Burian, an attorney at Kramer, Levin, Naftalis & Frankel in New York. "More exactly, claims can be filed for what it will cost to procure the services that were contracted for from a third party," he said.

"The law requires a bankruptcy trustee to work with the people who have the software and provide them with what they need to continue operating," said Roberta Colton, an attorney at Trenam Kemker in Tampa, Fla., and chairwoman of the Business Law Section of the Florida Bar Association.

Colton said users can protect themselves if they do their homework early on. "Before you make any sizable purchase, find out as much as you can about the company. Get a balance sheet and a financial statement, and look for longevity. You want a company that's been around for a while," he said.

Disorganized or unresponsive vendors should set off warning bells in users' heads, as well, Burian said.

"If something like communication or response request time starts to lag, find out why. That could be a red flag," Wohl said. "Surprises shouldn't happen."

When putting together large contracts, many users ask the vendor to place the product source code in the hands of an escrow agent, just in case the vendor goes belly up. Some of Visix's larger customers, including Bellcore, Inc., did that and can now use the product source code to fix bugs and troubleshoot until they have another product in place.

**CLASS ACTION**

Even in a case such as Visix's, where the vendor decides to simply dissolve, customers can band together and force it into involuntary bankruptcy, Colton said.

"This action brings all of the assets back into the estate and distributes them to the creditors," she said.

"Although a lot of this sounds like common sense, we often talk to customers who find themselves in difficult situations for two reasons," Wohl said. "First, in many cases they bought only on price instead of weighing the other factors. And second, they didn't follow the Boy Scout motto; they weren't prepared." □

# Pairing in vogue

CONTINUED FROM PAGE 39

is equally critical, according to Mike Rusert, vice president of operations at Canon Computer Systems, Inc. in Costa Mesa, Calif. Canon is a $1 billion manufacturer of ink-jet printers and digital cameras.

Under an agreement with Austin, Texas-based systems integrator PSW Technologies, Inc., Canon is selling development tools and object-based software frameworks used in its new object-oriented order management system.

"Any time we have an opportunity to recoup our return on investment, we certainly would" take that opportunity, Rusert said. "The key is who you sell to," he said, noting that Canon wouldn't market its technology to rival Hewlett-Packard Co.

**COMPETITORS, CUSTOMERS**

For companies whose competitors are also customers, having a head start with the technology to be sold is an absolute requirement.

"We enter into relationships where we have a time advantage," said Dick Weaver, a Farmland executive who manages the OneSystem joint venture. Optimally, that period is 18 to 24 months, Weaver said. OneSystem, for example, was set up to provide its R/3-related services to Farmland units exclusively for its first three years and then sell them on the open market.

Monsanto also has time on its side, said Bob Barrett, who headed the life sciences company's R/3 implementation before becoming director of the new IBM Monsanto Solutions Center earlier this year.

"One could argue that there's some competitive advantage to all of those best practices, but Monsanto believes it has a lead and is happy with its learning-curve lead. Monsanto doesn't feel its jewels are at risk," he said.

But even with a lead, companies still must be careful about overestimating the revenue potential of joint ventures. That is especially true for IT managers who are eager to change executives' perception of IT as a ravenous cost center with an insatiable appetite.

> **"It's one of those things that falls into the category of sleeping with the enemy."**
>
> **– Laraine Segil**
> **Lared Group**

Going to market "is not the pot of gold at the end of the rainbow," said Peter G. W. Keen, chairman of Keen Innovations, a consulting firm in Great Falls, Va., and a *Computerworld* columnist. It often can do more harm than good, he said.

"The moment you sell into the marketplace, you have to divert resources, and most IS groups are already overloaded and can't meet all of the demands on them," Keen said. "If a joint venture creates additional resources, fine. If it takes them away, it's a waste of time." □

## Snapshot

### NAUGHTY, NAUGHTY

About 41% of the U.S. workforce gives corporate America a failing grade for business ethics. The top 10 ethical problems are:

1. Sexual harassment
2. Lying on reports/falsifying records
3. Conflicts of interest
4. Stealing/theft
5. Lying to supervisors
6. Discrimination
7. Abusing drugs/alcohol
8. Improper accounting practices
9. Violating environmental laws
10. Gifts/entertainment in violation of policy

Source: Walker Information, Indianapolis

TIBCO software connects all your applications, databases and networks. You become a global, real-time, event-driven enterprise. (Over 500 of the world's leading corporations are.) You know instantly the relevant events that drive your business. Your business processes are integrated for smarter, faster decisions. You reduce cycle times. You deliver customer service at the highest level. You win.

*See that four-leaf clover? It's yours.*

TIBCO

www.tibco.com

NEW YORK CHICAGO BOSTON HOUSTON PALO ALTO TORONTO WASHINGTON D.C. LONDON AMSTERDAM COPENHAGEN
STOCKHOLM FRANKFURT LUXEMBURG VIENNA ZÜRICH MELBOURNE SYDNEY HONG KONG SINGAPORE TOKYO

© 1998 TIBCO. All rights reserved.

# The Internet

Electronic Commerce ♦ The World Wide Web ♦ Intranets

## Briefs

### Online trading leaders

Online trading market share, October to December 1997

| | |
|---|---|
| Charles Schwab | 30% |
| E-Trade Communications, Inc. | 14% |
| Waterhouse | 8% |
| Datek | 8% |
| Fidelity Investments | 7% |
| DLJ Direct | 5% |
| Quick & Reilly | 5% |
| Ameritrade | 5% |
| Discover | 4% |
| Others | 14% |

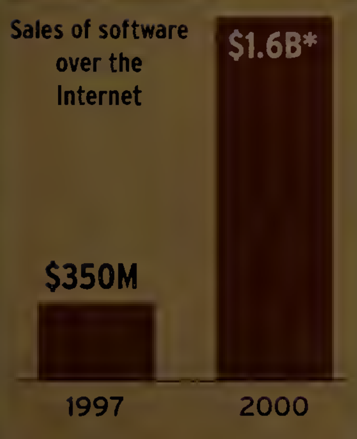
Source: Piper Jaffray, Inc., Minneapolis

### Platform data gap

Although 68% of more than 100 information systems managers reported that they believe that Internet computing is critical to mapping out overall technology strategies, 45% said their companies haven't studied the cost/benefits of Internet platforms, according to a survey by Cutter Consortium in Arlington, Mass.

The Business-IT Alignment Survey found that half of the responding managers have compared the costs and benefits of Internet/intranet/extranet platforms with mainframe and client/server options.

### SOFTWARE BOOM



*Projected

Source: Casal Group, Dallas

# Encryption exports not easy

▸ *Limits curb user choices for global security*

*By Laura DiDio*

U.S. CORPORATIONS seeking a waiver to export strong encryption technology to divisions or business partners in other countries should be advised that getting permission isn't quick or easy.

But with hard work and a little luck, it can be done.

Since 1996, when 128-bit key encryption technology first became available, export restrictions on it have been as tough as on some weapons systems. U.S. security agencies are reluctant to allow strong encryption products out of the country, where they would be out of U.S. control.

> The Commerce Department has granted 200 to 300 permits to export 128-bit encryption since mid-1997, although it currently has no way to count precisely.

But the Department of Commerce has granted more than 200 export waivers during the past year, many to financial institutions, according to a Commerce Department spokesperson, who said the department has no mechanism to keep a precise waiver count.

In addition to limiting encryption vendors' ability to sell overseas, the restrictions limit the technology choices of large organizations trying to do business electronically. But some manage anyway.

Take the case of the New Zealand Ministry of Health in Wellington, New Zealand, which initially was stymied in its plan to scrap its outmoded X.25 network in favor of a TCP/IP-based intranet with Internet access, secured with 128-bit key encryption.

The ministry chose a Sybase, Inc. package that included the Jaguar Component Transaction Server as the basis of its system. The ministry chose the system because it could process the 70,000 transactions the agency needed to make every day,

**Encryption exports,** page 44

# Saving money on expense reports

▸ *Skipping approval speeds payback*

*By Carol Sliwa*

AL DERGA WOULD love to get rid of all the paper involved with travel and expense reporting — even the receipts.

But Derga, manager of payroll and travel processes at Case Corp. in Racine, Wis., recognizes that the Internal Revenue Service doesn't share his view that employees could be responsible for keeping the receipts.

Even though full electronic reporting may not be possible, Case is going further than many other companies in automating the process. To reimburse employees more quickly, the manufacturer of agricultural and construction equipment uses an E-mail expense-report system and plans to move to an intranet-based system to eliminate the need for software upgrades on PCs. In either case, the company forgoes the typical approval processes unless there are unusual circumstances. Case uses an automated expense-report system for some employees and plans to move to an intranet-based system to make it more widely available.

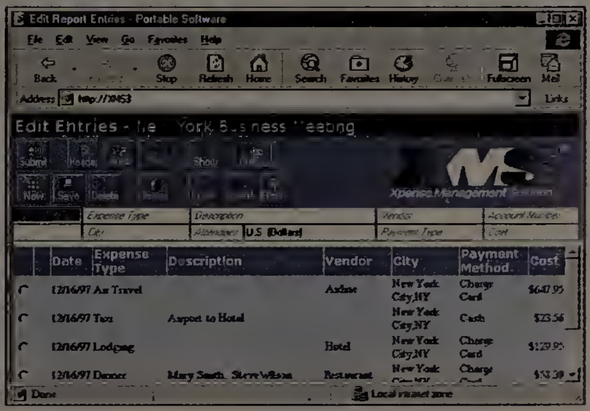
"Most of the expense reports were approved anyway," Derga said. "And it's actually a move to empower employees, rather than having someone review everything they do before they do it."

Approval happens "after the fact," Derga said.

"All the expenses are charged to cost centers," he explained. "We do a monthly printed report that shows managers what was charged to their cost centers, by expense category and by whom. Managers can review it at their leisure."

In July 1997, Case mandated use of an E-mail-based system

**Expense reports,** page 44



| Date | Expense Type | Description | Vendor | City | Payment Method | Cost |
|---|---|---|---|---|---|---|
| 12/16/97 | Air Travel | | Airline | New York City, NY | Charge Card | $647.95 |
| 12/16/97 | Taxi | Airport to Hotel | | New York City, NY | Cash | $23.56 |
| 12/16/97 | Lodging | | Hotel | New York City, NY | Charge Card | $129.95 |
| 12/16/97 | Dinner | Mary Smith, Steve Wilson | Restaurant | New York | Charge | $53.30 |

**Case plans to use Portable Software's new intranet-based Xpense Management Solution, which employees can access through browsers**

RESPONSE TIME

# Sitara promises faster Internet connections

*By Sharon Machlis*

HOW WOULD YOU like to offer visitors to your Web site a free piece of software that could make your site perform three times as fast for them?

If you buy a special server application to run alongside your conventional World Wide Web software, that is.

And if you can persuade Web surfers to download yet another bit of software from the Internet, at a time when many sites are shying away from plug-ins.

Several beta users recently committed to rolling out the software, from Sitara Networks, Inc. Sportsnetwork.com already uses it on a production site, and several other beta users report they have plans in the works.

"It performs as expected," said Mickey Charles, CEO and president of The Sports Network in Southampton, Pa. "We have already started getting E-mail from users thanking us for putting it up," Charles said, although he doesn't know how many users have downloaded the client part of the package.

Sitara's SpeedServer and the SpeedSeeker client were designed to overcome Internet congestion in several ways. The initial data-exchange "handshake" includes a file request, which eliminates the need for a second request. If packets are lost in a congested network, Sitara resends only the lost data,

Software, page 44

## Snapshot

### Multinational corporate Web sites by the numbers:

| | |
|---|---|
| 75% | Offer presales shopping help or information |
| 49% | Offer employment information online |
| 37% | Give postsales information or support |
| 37% | Post company contact information |
| 28% | Accept online job applications |

Base: 100 multinational corporate Web sites

Source: "The Missing Link" study, by Shelley Taylor and Associates, Palo Alto, Calif.

# Encryption exports tough

CONTINUED FROM PAGE 43

said Yogesh Anand, manager of information systems at the ministry.

The looming question was, Would the agency be able to persuade the U.S. government to grant it a waiver to use the 128-bit key encryption? "We seriously doubted it and were prepared to purchase the technology from a European or Asian security supplier," Anand said.

But that would be doing things the hard way. "Buying 128-bit key encryption as an add-on to the operating system and database isn't optimal. Integration isn't as simple or easy," he said.

Getting a waiver requires the approval of various U.S. agencies, including the FBI and the National Security Agency, said Tom Parenty, Sybase's director of data and communications security.

Sybase was prepared to lobby heavily for the waiver, but the ministry hit a lucky bit of timing. Shortly after it approached Sybase about the project, Parenty got the chance to testify before a congressional committee on behalf of a bill to ease U.S. encryption export regulations.

"I specifically brought up the New Zealand Ministry of Health's new network and need for 128-bit key encryption," he said.

Lucky seating helped, too. Bill Reinch, undersecretary of commerce for export controls, sat next to Parenty at the hearing. "I did some private lobbying," Parenty acknowledged.

He also submitted a formal application to the Commerce Department. The waiver was granted two months later.

But that is the only time a Sybase customer has been successful in getting a waiver.

### WORTH THE WAIT

As for the New Zealand Ministry of Health, the waiver was worth the wait.

Its new intranet will help the agency save 30% to 40% in recurring costs by eliminating its X.25 wide-area network. It also will make it easier to share patient data among many agencies and service providers, Anand said.

But U.S. corporations that are denied the waiver will lose business because they can't guarantee privacy to international customers, according to Jerry Berman, director of the Center for Democracy and Technology in Washington.

"The damage to customer confidence and the bottom line to U.S. businesses could be immeasurable. At this point, we can't even quantify it," Berman said. □

## Feds go easier on financial industry

**Since May 1997, the Commerce Department has approved the export of strong public-key encryption for the financial industry.**

**Commerce Department regulations now allow the export of products specifically designed to support financial transactions. Those include direct home banking software of any key length, which banks offer to their customers worldwide.**

**A Commerce Department spokesperson said the Clinton administration dropped the ban on 128-bit key encryption exports because banks and other financial institutions are "subject to explicit legal requirements and have shown a consistent ability to provide appropriate access to transaction information in response to authorized law enforcement requests."**

**So far, more than 40 members of the Key Recovery Alliance, including IBM, Hewlett-Packard Co. and Network Associates, Inc., have committed to developing such products. — Laura DiDio**

### EXPENSE IT

A sampling of Web-based expense management products

| Vendor | Product |
|---|---|
| Portable Software<br>Redmond, Wash. | Xpense Management Solution |
| Captura Software<br>Bothell, Wash. | Employee Payables |
| Extensity<br>Emeryville, Calif. | Extensity Expense Reports |

# Saving money on expense reports

CONTINUED FROM PAGE 43

from Portable Software Corp. in Redmond, Wash. With it, employees report expenses in electronic forms that are routed into the payroll system. They are required to print out a cover page and attach receipts for any expenses that exceed $25. Reimbursements are made in the employee's paycheck, which typically is deposited directly into the employee's bank account.

"The feeling is definitely that the benefit of more rapid reimbursement and greater use of the electronic systems outweighs the potential risks," said Dick Lunde, director of Case's financial shared service center. "It's been very successful."

Employees now can prepare reports in five minutes rather than 15 to 30 minutes; managers don't have to take time to check reports; and data reaches the payroll system in 15 minutes rather than a week, Lunde said. Case handles about 5,500 expense reports per month.

"From a business standpoint, it makes a lot of sense, if you can get the proper level of fraud detection and issue resolution on the back end in analysis," said Daniel Sholler, a senior research analyst at Meta Group, Inc. in Stamford, Conn. "But it's not the generally accepted [business] practice."

### GOING BY THE RULES

Several software packages let users create rules to flag any violations in company policy.

At Case, managers can require that employees submit their expense reports for approval, and the expense-reporting software can alert the managers when a report is ready. But managers generally do that only for an excessively large expense report, a combination business/pleasure trip or an unusual circumstance.

"Those conditions are all printed on the cover page," Derga said. "It's easy for [employees] to determine if they need approval."

Case plans to switch to Portable's new intranet-based system in the coming year. That will eliminate the need to install software at each PC and distribute hard-copy reports to managers. Those managers will be able to access the information more quickly via their World Wide Web browsers.

"The cost savings [from not requiring approvals] are nice," Derga said. "But the motivator was to free up employee time. We wanted employees to spend less time doing expense reports. Even if they do them on weekends, it's taking away from time they might be spending focusing on business needs." □

# Software promises quicker Internet access

CONTINUED FROM PAGE 43

not the entire packet as would happen on a typical Hypertext Transfer Protocol connection.

The Sitara server also sends out page data in a single connection — even if data on one page is stored on multiple servers — instead of requiring a separate server "hit" for each object and file on a page.

The server lists for $75,000 and is shipping now; beta users have negotiated other pricing.

"We have seen [speeds] two to five times faster [in tests]," said Brian Sugar, new-media director at J. Crew Group, Inc. in New York. The biggest speed improvement is when someone connects over a bad line, he said; for a clean connection, the boost might only be 5%. J. Crew will promote the Sitara SpeedSeeker client as part of its Web site's daily golf game.

But not everyone who has seen the product is convinced.

"It really doesn't speed things up that much," said Glen Lipka, founding partner and technology director at Kokopelli New Media in New York, which has done work for Columbia Records and *Reader's Digest* magazine, among others. Page caching and other methods already can increase Web performance somewhat, and "plug-ins can only help a little bit," Lipka said.

And requiring consumers to download additional software and run an installation program is "a nonstarter," regardless of the benefit, said Vernon Keenan, a senior analyst at Zona Research, Inc. in Redwood City, Calif.

Sitara must solve the distribution issue for consumers, although downloading client software would be less of an obstacle in business-to-business electronic commerce, according to Ted Julian, an analyst at Forrester Research, Inc. in Cambridge, Mass. Eventually, the technology could be incorporated into major Web server and browser software.

Sitara executives said they will work on agreements to bundle their client technology with more popular software such as browsers.

For now, J. Crew is testing the software for free in return for promoting the client download, Sugar said. "It's absolutely worth it," he said. "It doesn't hurt our site, and it could very well help our site." He said he plans to evaluate costs vs. benefits after seeing how popular the software is with users. □

### Sitara technology strategies

**Initial "handshake":** File request comes with initial connection request, and end of data message comes with final data packet

**Packet loss:** Only lost packets are resent, not entire packet sets

**One connect per page:** A page is sent as a single connection instead of separate connections per page element

**Dynamic connection rates:** Flexibility in dynamically adjusting connection rates instead of doubling or halving rates depending on conditions

## NEW PRODUCTS

**INTEL CORP.** has announced Intel Web Design Effects and Intel Indeo Media Kit, World Wide Web development software for creating animated effects with audio and video.

According to the Santa Clara, Calif., company, Web Design Effects is a tool set that uses graphic engineering techniques to create nonrepeating animated Web effects such as fire, rain or smoke. Indeo Media Kit helps users produce and deliver video clips via the Internet. Viewers can preview and choose at which quality to save the video and can continue browsing while the video completes its download in the background.

Web Design Effects and Indeo Media Kit cost $149 each.

**Intel**
**(408) 765-8080**
**www.intel.com**

**MOAI TECHNOLOGIES, INC.** has announced LiveExchange 2.0, World Wide Web-based auction software for businesses that want to sell off excess assets and aging inventories.

According to the San Francisco company, the full Java application enables companies to create "virtual private marketplaces" for preferred buyers via an extranet. It provides real-time publish and subscribe data updates, including bid changes, price updates and audit trail creation. Users brand their auctions with customizable templates. It is available as a Java server application with Java or Hypertext Markup Language clients.

Pricing begins at $100,000.

**Moai Technologies**
**(415) 490-5550**
**www.moai.com**

**TIMEVISION, INC.** has announced Org Publisher for Intranets for generating organization charts from employee data and publishing them on company intranets.

According to the Irving, Texas, company, the Windows software was designed to help users turn data in payroll systems or human resources employee databases into charts that can be accessed by intranet users to locate people, job titles and telephone numbers. The organization charts can include "hot spots" that launch users into other World Wide Web pages in the company.

Org Publisher for Intranets costs $375 per desktop. Site licenses range from $5,000 for a 500-employee site to $45,000 for a 20,000-employee site.

**TimeVision**
**(888) 674-2427**
**www.timevision.com**

**LUCKMAN INTERACTIVE, INC.** has announced Web Studio 2.0, a software toolbox for creating World Wide Web sites.

According to the Los Angeles company, the software comprises tools for developing sites that incorporate Java, database, Virtual Reality Modeling Language and report-generation technologies. It comes with the company's Hypertext Markup Language editor, called WebEdit Pro 3.0, which provides users with syntax checking and a WYSIWYG preview window. A multimedia kit for creating three-dimensional graphics and sound effects also is included.

Web Studio 2.0 costs $149.95.

**Luckman Interactive**
**(213) 614-0966**
**www.luckman.com**

*Omaha, Lincoln & Des Moines Careers*
*will be featured in*
COMPUTERWORLD
April 13 in print and on the web
Deadline: April 9 at 3pm
1-800-343-6474,x8000

online product info

For easy access to information on those hard-to-find products and services you need, visit the Marketplace ad index in the Resource Center of @Computerworld.

Marketplace & Card Deck Advertiser Index

For more information on the products and services you need, click on the listing for access to that advertiser's home page!

Choose a product category:

- PC Hardware
- PC Software
- Networking Hardware
- Networking Software
- Network Management
- Help Desk/Diagnostic
- Test Equipment
- Utilities
- Fax/Messaging
- Notification
- Remote Access
- Uninterruptible Power Supplies
- Racks/Enclosures
- Security
- Printers
- Bar Code Scanning
- Business Solutions
- Books & Newsletters
- Year 2000
- Education & Training

PC Hardware

- Compsee, Inc
- National Instruments
- American Microsystems, LTD

PC Software

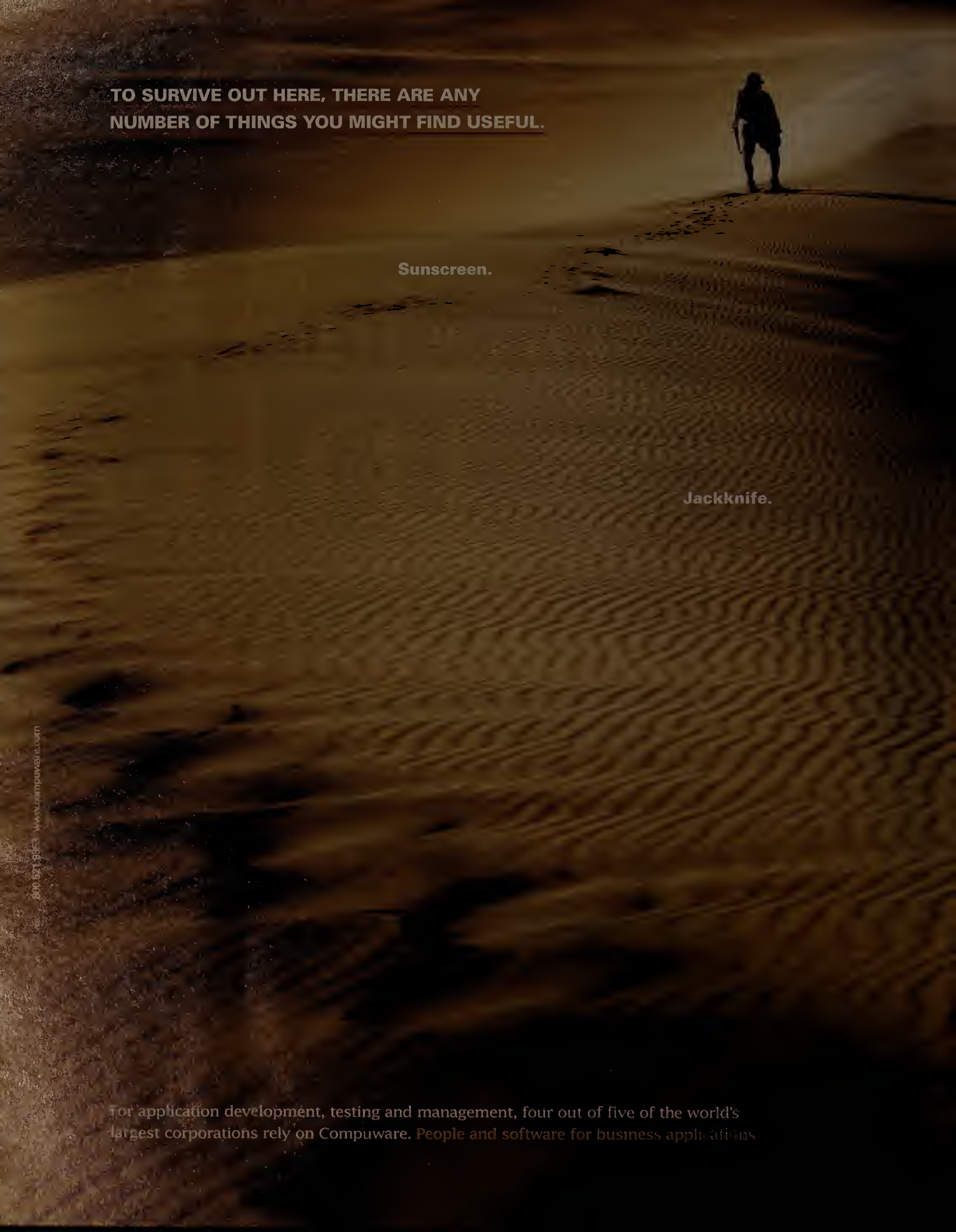
- American Microsystems, LTD
- ForeFront Direct
- TeamShare, Inc.

Check it out. Bookmark it and visit frequently for immediate access to vendors' web sites. Let us know what you think! Contact Laurie Gomes (laurie_gomes@cw.com) with your comments and suggestions.

It's easy. And there's only one URL to remember: www.computerworld.com/marketplace.

Advertisers note: Call 1-800-343-6474 extension 8249 for information about direct response advertising opportunities in Computerworld.

COMPUTERWORLD


TO SURVIVE OUT HERE, THERE ARE ANY NUMBER OF THINGS YOU MIGHT FIND USEFUL.
Sunscreen.
Jackknife.

For application development, testing and management, four out of five of the world's largest corporations rely on Compuware. People and software for business applications

800 521 9353 www.compuware.com

Compass.
Water.
COMPUWARE
What do you need most?

**Spec your Y2K code with Cap Gemini America, and we'll ship it back renovated in just four weeks.***

Year 2000 renovation is a punishing task—especially when you're peeling open one program at a time.

Save your developers that duty by calling Cap Gemini America today. Our Application Renovation Center℠ can provide 100% Year 2000 renovations from specification to delivery in four weeks, guaranteed.* Our automated renovation approach provides rapid, large-scale renovations to spec, leaving your developers free for more important development priorities or to conduct testing.

Cap Gemini America's ARC*drive*℠ has already helped more than 300 businesses worldwide address Year 2000 problems on over 3 billion lines of code. And we can do the same for you.

Contact us for more complete details on our renovation offers or to learn more about the ARC℠, as well as Cap Gemini America's testing services, factory licenses, and program management offices.

We can help you put the Year 2000 behind you.

And that's no small potatoes.

**FREE 48-HOUR QUOTE** on standard renovation groups.

**4-WEEK TURNAROUND** from spec to delivery.

**100% GUARANTEE** with extended warranties available.

**FREE TESTING VIDEO** created by Computer Channel, while supplies last.

1-888-Y2KTODAY

CAP GEMINI

www.usa.capgemini.com/y2k

Cap Gemini America, Inc., TransMillennium™ Services, 1114 Avenue of the Americas 29th Floor, New York, NY 10036

* The four-week offer and 100% guarantee apply to standard renovation groups consisting of MVS COBOL code from 50,000 to 2 million lines [illegible]

# The Power of Information is in your hands.

# Subscribe now and save over 80%

## Read for Profit

☑ 51 issues for $~~48~~. Now only $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

## Read for Knowledge

☑ 51 issues for $~~48~~. Now only $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

## Read for Power

☑ 51 issues for $~~48~~. Now only $39.95

First Name MI Last Name

Title

Company E-mail address

Address

City State Zip

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

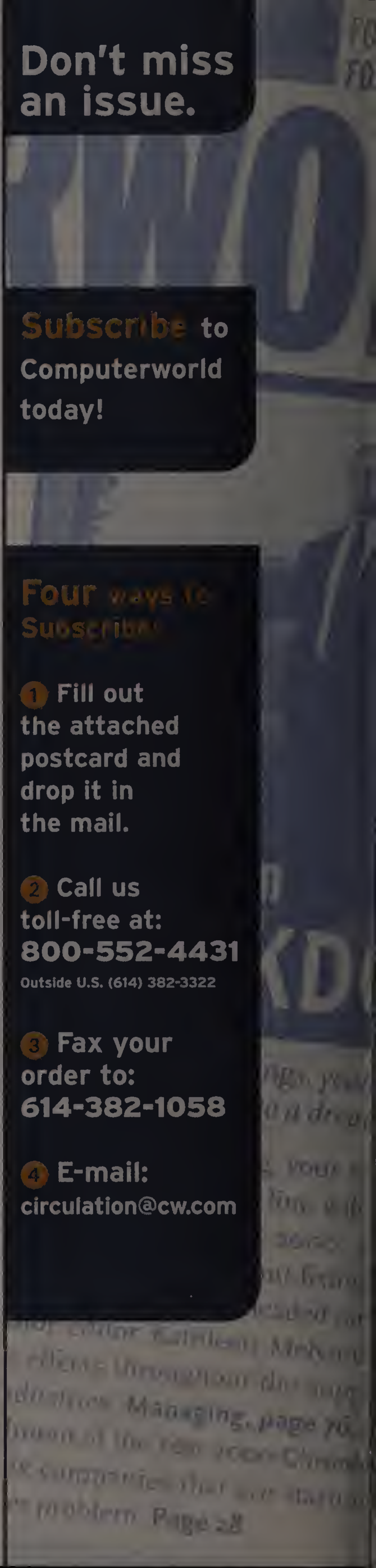
**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144



## Don't miss an issue.

**Subscribe to Computerworld today!**

**Four ways to Subscribe:**

① Fill out the attached postcard and drop it in the mail.

② Call us toll-free at:
**800-552-4431**
Outside U.S. (614) 382-3322

③ Fax your order to:
**614-382-1058**

④ E-mail:
circulation@cw.com

# The Enterprise Network

**LANs ♦ WANs ♦ Network Management**

## Briefs

### Antivirus intelligence

TEGAM International LLC has released a virus package that protects PCs without requiring updated software patches. The In-Defense package uses artificial intelligence and logic algorithms to distinguish between viral and nonviral activity. Its checking system scans 4,000 files per minute and searches for such viral activity as replications. In-Defense costs $109.

### NT 5.0 beta is here

Microsoft Corp. has released the latest beta release of Windows NT 5.0. It includes the IntelliMirror replication function, which lets administrators install the operating system from a central Windows NT 5.0 server; schedule remote boot-ups; and replicate NT 5.0 networks at multiple remote sites. No release date is set. Microsoft officials said the product will ship by year's end.

### Outlook peeks out

Microsoft last week made available at its World Wide Web site the shipping version of its Outlook 98 E-mail and groupware client. The product has improved Internet hooks and is faster than previous versions, the company said. Users can download the software for free until June 30 from *www.microsoft.com*.

### Secure consolidation

Security Dynamics, Inc. in Billerica, Mass., has acquired New York-based Intrusion Detection, Inc., a maker of security analysis tools for Windows NT and Novell, Inc.'s NetWare. The deal was valued at $32.5 million.

**Worldwide virtual private network market***

| | |
|---|---|
| 1997 | $205M |
| 2001 | $12B** |

* Includes products, systems integration and services

** Projected

Source: Infonetics Research, Inc., San Jose, Calif.

# Virtual net helps build real business

LYNN SILER

**Pediatric Physicians Alliance's Mike Gentry: "We needed a flexible, easy-to-use, low-cost way to get billing data from Point A to Point B, and a VPN was the clear-cut winner"**

*By Bob Wallace*

WHILE MOST COMPANIES are implementing virtual private networks to save money on wide-area networks, Pediatric Physicians Alliance (PPA) is using one to put itself into business.

PPA is buying the assets and staff of geographically dispersed, independent physician practices, then selling advice to doctors on how to more efficiently run their operations. The virtual private network (VPN) provides an easy-to-build, easy-to-use connection from the practices to the company's data warehouse and E-mail system.

"A VPN is perfect for a start-up company, and since it uses the Internet, it keeps WAN costs down," said Mike Gentry, director of information systems at Norcross, Ga.-based PPA. "We needed a flexible, easy-to-use, low-cost way to get billing data from Point A to Point B, and a VPN was the clear-cut winner over 800-number arrangements and private lines."

**VIRTUAL PRIVATE NETWORKS**

A VPN is a set of secure links that carry encrypted traffic over the Internet or across a single Internet service provider's backbone network. VPNs have been catching on initially as low-cost alternatives to private data networks.

The 15-person company, which owns 10 physician practices and is in the market for more, gives newly acquired practices a set of VPN client software for a PC, a modem and a telephone line. PPA pays about $19.95 per month to a

**Virtual net,** page 50

# R/3 demands management

▸ *Successful rollout requires attention to systems tools, too*

*By Patrick Dryden*

MANAGE FIRST, DEPLOY LATER.

IS managers say the right mix of management tools and procedures can pave the way for the rollout of large-scale packaged applications throughout an organization.

Whatever strategy they choose, consultants say, information systems groups must prepare early to manage the complex mix of clients, servers and networks.

For the increasing number of organizations that are moving key business functions to software from vendors such as The Baan Co., PeopleSoft, Inc. and SAP AG, an application rollout "brings to a head the fact that

**Management tools,** page 50

# High-speed 'net lines start to appear

*By Matt Hamblen*

IN THE PAST TWO WEEKS, a San Francisco Bay area start-up launched business-quality Digital Subscriber Line (DSL) access to the Internet, while another carrier announced expansion plans to five major U.S. cities.

Analysts estimate that there are only about 7,000 high-speed DSLs nationwide, but they believe that number will mushroom to tens of thousands by next year based on the amount of money being invested in small, competitive local exchange carriers providing DSL.

DSL uses ordinary copper telephone lines and provides speeds that can be 10 times faster than Integrated Services

**High-speed lines,** page 51

# Multiuser Win NT gets flexible with Citrix bundled

*By David Strom*

IF YOU NEED TO RUN Windows applications on either non-Windows machines or machines that are too slow to run Windows comfortably, consider Microsoft Corp.'s Windows Terminal Server (WTS), formerly known as Hydra.

Although still in beta release, the server is worth a look — particularly in tandem with Citrix Systems, Inc.'s Picasso, a separate series of software that sits on top of and augments WTS.

WTS was designed to let a user install desktop applications on a server, not on the desktop. That makes the applications easier to manage because if any changes need to be made, the user can simply update the server. But WTS is aimed at a Windows environment and sup-

**Multiuser NT,** page 50

**PRODUCT REVIEW**

▸ *Windows Terminal Server Beta 2*

**MICROSOFT CORP.**
Redmond, Wash.
(425) 882-8080
*www.microsoft.com/ntserver/guide/hydra.asp*

**Pro:** Helps manage applications on the server

**Con:** Client connection manager lacks functions

▸ *Picasso Beta 2*

**CITRIX SYSTEMS, INC.**
Fort Lauderdale, Fla.
(954) 267-3000
*www.citrix.com/products/picasso.asp*

**Pro:** Performance gains for non-Windows clients

**Con:** Firmware upgrade may be needed

# Management tools prove key for R/3

CONTINUED FROM PAGE 49

you need a management strategy," said Steven Foote, research strategy vice president at Hurwitz Group, Inc. in Framingham, Mass.

"About three months into production, you'll hit serious problems if you haven't shored up the infrastructure and put a systems management plan in place," warned Tim Harmon, a senior program director at Meta Group, Inc. in Westport, Conn.

For example, Harmon said support calls escalate when companies implement packaged applications. Systems and databases demand more attention. As a result, IS costs leap when the staff makes up for a lack of planning, he said.

But users are wising up, Foote said. Led by "the mainframe guys who recognize the need for centralized, automated management," IS groups now more often plan ahead, he said.

The IS group at Ocean Spray Cranberries, Inc. shopped for best-of-breed management tools when key applications began moving to distributed systems.

"Our management suite was falling apart, but we couldn't afford integrated, top-end tools," said Tom Modestino, director of information technology at Ocean Spray in Lakeville, Mass. "Now we can piggyback on the [SAP] R/3 conversion project to get more management tools." New tools are helping Ocean Spray prepare for R/3 installation, which begins in April and should last until fall. The software distribution and remote configuration capabilities of TME 10 from Tivoli Systems, Inc. have eased the upgrade of 2,000 PCs, Modestino said.

CHRIS FITZGERALD

**Ocean Spray's Tom Modestino: "We can piggyback on the R/3 project to get more management tools"**

"We have been able to maintain our existing staff even though we've quadrupled the complexity of our network and clients," said Gil Stringer, Ocean Spray's manager of computer services.

"Taking on R/3 wasn't a big thing," said Robert Montero, a senior systems analyst at Chevron Information Technology Co. in San Ramon, Calif.

The oil company's systems arm already had built a network and systems management framework on Hewlett-Packard Co.'s OpenView IT/Operations. It supported other client/server applications and integrated management functions for mainframes, servers, LANs and the global network.

With help from HP and SAP programmers, Chevron's automation specialists added instrumentation to the R/3 monitor and linked it to OpenView, Montero said. The six-month implementation went smoothly, and application management — such as adding a thousand users recently in Europe — has been relatively painless, he said.

"We had the benefit of planning early and leveraging existing tools," Montero said. "Problems happen when somebody just tosses a big application over the fence."

An existing partnership determined the management strategy at Allegiance Healthcare Corp. in McGaw Park, Ill.

"Every vendor was selling futures, so I bet on those who had a history of coming through for me," said Kathy White, chief information officer.

She said her goal is to be dependent on as few vendors as possible to eliminate finger-pointing. Computer Associates International, Inc. supplied much of the mainframe software, so Allegiance began testing its Unicenter TNG for managing all enterprise aspects. ☐

---

**▸REVIEW:** *Windows Terminal Server Beta 2, Picasso software*

# Multiuser NT gets flexible with Citrix bundled

CONTINUED FROM PAGE 49

ports only IP and Windows clients. The bundled Citrix software adds support for non-Windows platforms such as Unix, Java-based clients and the Macintosh. The Citrix software requires the second beta version of WTS to operate.

I tested WTS on an Intel Corp. Pentium machine running Windows NT Server with 64M bytes of RAM. Lots of RAM is required to use these products. They slice the available memory on the server and use that memory to run client-based applications. The more server RAM available, the more clients will be supported and the faster things will run.

Citrix and Microsoft recommend 8M bytes of RAM per user. I recommend starting with at least 128M bytes of RAM.

On the client side, I added Tektronix, Inc.'s Thin 200 Windows terminal hardware, which is a diskless network computer that works with the Citrix and WTS products but requires its own server software.

Installing WTS is a lot like installing Windows NT. Once the server is installed, you must go to your Windows desktops and install the client piece. Microsoft recommends that you install WTS on a stand-alone server rather than on a primary or backup domain controller. Then add in the Citrix server software and the Tektronix server software. The Citrix installation is fairly painless and well-documented in the beta reviewer's guide.

When using a diskless client machine, be sure the diskless machine can boot from whichever server is chosen — in my case, the Citrix server.

**Citrix and Microsoft recommend 8M bytes of RAM per user. I recommend starting with at least 128M bytes of RAM.**

### BAIT AND SWITCH

Next, install the server-based applications that will be used by each user. This is tricky; you are trying to fool the applications into thinking they are running on the server when they are actually being displayed and controlled from the clients.

For example, Microsoft Office normally uses personal directories on the desktop, which need to be set up as server-based directories under WTS.

Finally, install the client software appropriate to the particular server: WTS has Windows-oriented clients, while Citrix has a variety of client products. So much for a completely thin client. You still need this software, otherwise you can't connect to anyone's server.

I tried Web browsers, Office and a variety of simple applications. Most of the applications I tested worked reasonably well. The screens responded well to mouse movements and keystrokes. Earlier versions of Citrix products were far less responsive. I did get the odd error every now and then, and I wasn't sure what caused it.

For older machines, there is a real payoff: Netscape Communications Corp.'s Communicator ran about 20% faster over the Citrix client than natively on a 200-MHz Macintosh.

With both the Citrix and WTS servers, managers can choose to have users log in to the overall Windows desktop on the server or bring up a particular application automatically. Use the former if you want your users to have access to many applications; the latter is good for restricting them to one or two specific applications.

To restrict users under WTS, you need to set up Microsoft's Client Connection Manager on each desktop. The product lacks most of the functions available on the Citrix application launcher. For example, you need to know the exact path to your application and enter it correctly in the client manager on every desktop. That can get tedious.

With the Citrix client software, you set up your applications on the server and just refer to them by name when you set up the desktop.

The products require lots of work if you are just trying to keep your applications on servers. If you need cross-platform operations, take a closer look at the Citrix product. ☐

---

*Strom is a reviewer in Port Washington, N.Y. He can be reached at david@strom.com.*

---

# Virtual net links alliance of physicians

CONTINUED FROM PAGE 49

local Internet service provider for unlimited Internet usage for each site.

"The VPN gives us a competitive advantage because it lets us integrate practices very quickly," said Jeff Pruitt, PPA's corporate controller. "One of the biggest downfalls of competitors is that they can't get [practice] information assimilated quickly. The VPN lets us get key data from geographically dispersed locations to our location in a timely manner."

PPA wants to make each practice as efficient as possible, said Maureen Andrews, practice manager at Pediatrics Specialists, which has sites in Crystal Lake and Great Barrington, both in Illinois.

"PPA will download clinical information and look at how we get reimbursed to see if it's in line with the national average and parameters they've set for alliance members. If it isn't, they'll recommend changes that will make us more efficient," Andrews said. She said she also can use E-mail to access central corporate assets, such as IS and human resources experts, to help with projects rather than paying for outside consultants.

Gentry estimated that using leased lines to connect new offices would cost $4,820 per site per year, while annual VPN costs are less than $1,000 per location.

And that savings will make the company more competitive in the rough-and-tumble of the medical business, where real operational savings come from the efficient use of information, said Gene Sirotin, an analyst at health care consultancy William Greene Co. in Katonah, N.Y.

"Providers that realize these efficiencies first will benefit by being able to negotiate better contracts because their costs are lower," he said.

The VPN is also valuable to PPA corporate employees. The company's sales representatives access the VPN from their laptops, Gentry said.

Gentry said he expects a site's data traffic to require more capacity than its dial-up VPN link can support six to 12 months after a site has been acquired. It will then be moved to a frame-relay network, he said. ☐

# High-speed 'net lines are now beginning to appear

CONTINUED FROM PAGE 49

Digital Network (ISDN) access — and at lower cost.

"I could hook up all my five Bay area offices with DSL for what it costs to put T1 service in one office," said Keith Waldor, chief information officer at Employers' Medical Network, Inc. in Santa Clara, Calif.

"For a really large corporation, DSL isn't as attractive. But for midsize companies that are growing, it lets us compete on a higher level without the expense of having to buy a router and have somebody on staff work on that equipment," Waldor said.

### HIGH QUALITY, LOWER COST

A monthlong test of DSL service from NorthPoint Communications, Inc. in San Francisco has been so successful for the company, Employers' Medical is considering linking five offices in the Bay area.

With Symmetric DSL, it will get speeds up to 1.04M bit/sec. at $199 a month per connection.

That would be much less expensive than installing T1 service of 1.54M bit/sec. at all five sites for $1,000 each, Waldor said.

DSL service has been high quality, and at less than $200 per month, it costs much less than ISDN service. The latter can cost up to $500 per month for only 128K bit/sec. speeds, Waldor said.

Prem Uppaluru, CEO at Vois Corp. in Sunnyvale, Calif., has tested NorthPoint's DSL service for nearly two months and plans to sign up for the service as a replacement to ISDN and frame relay.

**PAYING FOR SPEED**

NorthPoint Communications' monthly DSL prices

| | |
|---|---|
| 160K bit/sec. | $99 |
| 416K bit/sec. | $135 |
| 784K bit/sec. | $165 |
| 1.04M bit/sec. | $199 |

Source: NorthPoint Communications, Inc., San Francisco

One connection will save the company $700 per month, he said.

Waldor also saves money by not having to provide an additional server at the site of his Internet service provider.

He said he can now keep the server on company premises, where it is secure and where he can add back-end software when needed.

Employers' Medical uses the Internet to notify companies in 15 states of workers' compensation claims, so the companies can find claim records on Employers' Medical's server.

By using the Internet, the company reduces the time it takes to transfer records from three weeks by mail to a day, Waldor said.

NorthPoint sells the service through Internet service providers.

Waldor and Uppaluru have been receiving the NorthPoint Symmetric DSL test service through Concentric Network Corp. in Cupertino, Calif., a national Internet provider that plans to make DSL available in the Boston area this summer. Another DSL provider, Covad Communications Co. in Santa Clara, Calif., will sell its service both directly and through Internet providers.

Covad recently announced plans to expand into Boston, Los Angeles, New York, Seattle and Washington — markets that comprise about 20% of the U.S. population. "I think there's a tremendous interest by companies in DSL," said Hilory Mine, an analyst at Probe Research, Inc. in Cedar Knolls, N.J. ☐

Congratulations to the Finalists:

COMMUNICATIONS

**ARCADIA S.R.L.** • Santa Fe, Argentina
LTBS – LT Broadcast System

**DigitalXpress** • Redmond, WA
DigitalXpress Broadcast and Receive Studio

**Southern New England Telecommunications Corporation** • New Haven, CT
RAPS (Repair Answer Point System)

ENERGY/UTILITIES

**Chevron U.S.A. Production Company** • Houston, TX
VISA – Your Passport to Data

**Transneft** • Moscow, Russia
Russian Oil Pipeline Supervisory Dispatch and Control System

**Tennessee Valley Authority** • Chattanooga, TN
Fossil Unit Monitoring and Evaluation System

FINANCIAL/INSURANCE SERVICES

**Insure One** • Bedford Park, IL
L.E.A.D.S. (Lead Electronic Automated Distribution System)

**MetLife** • Clarks Summit, PA
MetLife Corporate Billing System (CBS)

**Prudential Investments** • Newark, NJ
Prudential Investments Common Front End (CFE)

GOVERNMENT/JUSTICE AND PUBLIC SAFETY/EDUCATION

**Farm Services Agency, United States Department of Agriculture** • Kansas City, MO
Electronic Bid Entry System (EBES)

**National Reference Library** • Singapore
MIDAS

**U.S. Navy, Commander, Airborne Early Warning Wing, Pacific Fleet** • San Diego, CA
JTIDS Moving Map Tactical Information Display System (JMMTIDS)

HEALTHCARE

**New York Department of Veterans Affairs Medical Center (630/151)** • New York, NY
VA Pedorthic CAD/CAM System

**Quantitative Medical Systems** • Emeryville, CA
Focus 2000™

**Trinity Hospital Emergency Physician Group** • Mount Prospect, IL
"ED-WEB-WRITE"

MANUFACTURING/ENGINEERING

**Hunter Engineering Company** • Bridgeton, MO
PicEdit

**Packard Bell NEC, Inc.** • Sacramento, CA
Manufacturing Control System (MCS)

**TERMO** • Skofja Loka, Slovenia
Mineral Wool Production Supervisory Computer Vision System

RETAIL SERVICES/DISTRIBUTION

**Acenet, Inc.** • Alpharetta, GA
AceNet

**ICET Arte Murano, C.A.** • Caracas, D.F., Venezuela
ARENA

**Someday Isle, Inc.** • Brattleboro, VT
SomedayIsle.Com Internet Toy Store Manager

BUSINESS ADMINISTRATION

**BankBoston Corporation** • Boston, MA
Electronic Customer File

**Electronic Data Systems** • Plano, TX
TechLore

**RR Systems, Inc.** • Brookfield, WI
Corporate Project, Time and Billing Management System

CUSTOMER MANAGEMENT/CUSTOMER SERVICE/SALES FORCE AUTOMATION

**Experimental Aircraft Association** • Oshkosh, WI
Event Management and Support System

**First Chicago/Mercantile Services, LLC** • Chicago, IL
EFTPS Customer Service

**Hughes Supply Inc.** • Orlando, FL
QuoteIT!

Visit the contest Web site to learn more about this year's finalists.

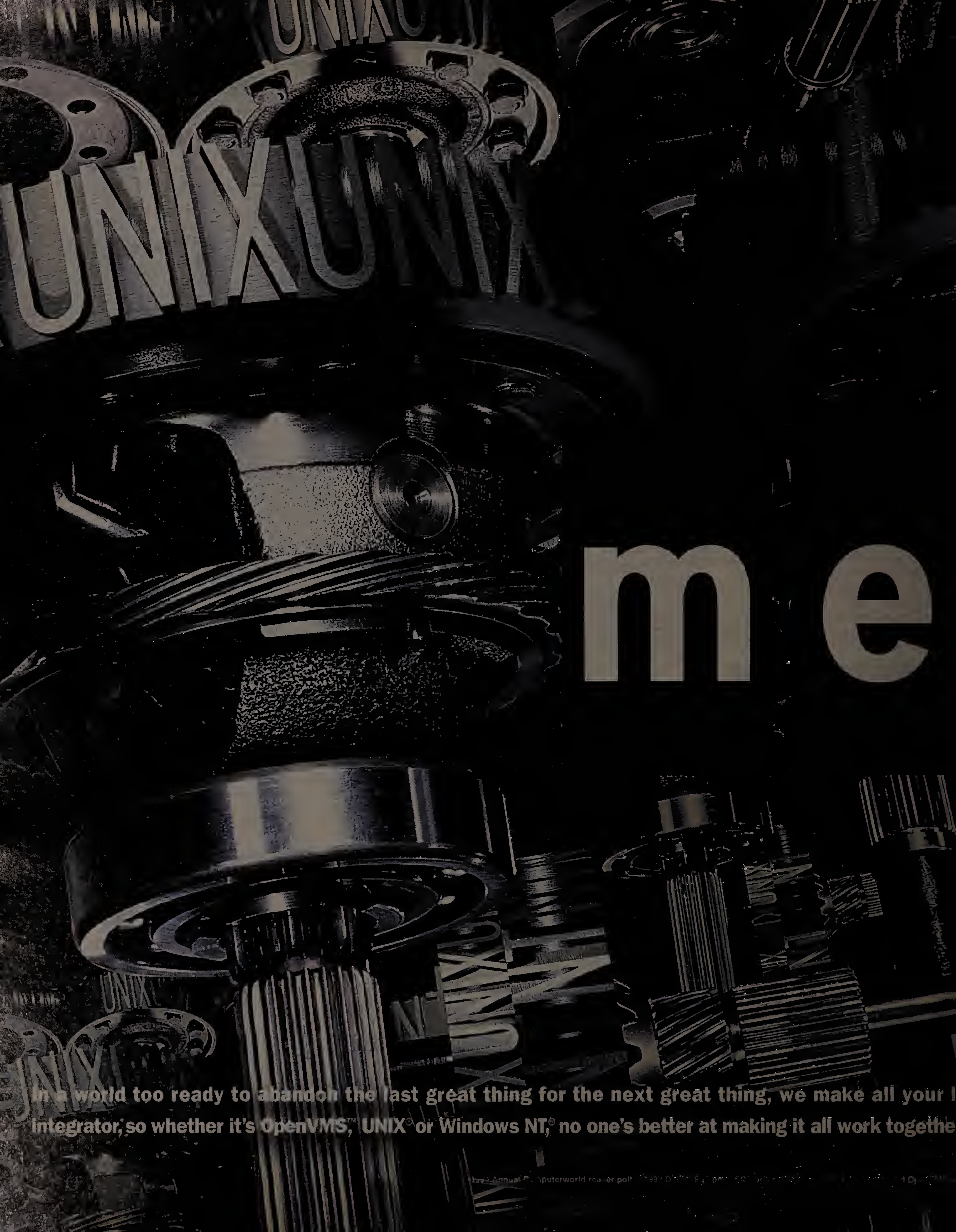
www.wwopen.com

For more contest information:
e-mail wwo@jcai.com or call 1-800-829-4143.

Only at Windows World

APRIL 20–23, 1998 • McCORMICK PLACE • CHICAGO, ILLINOIS

©1998 ZD COMDEX & FORUMS • 300 First Avenue Needham MA [illegible]



In a world too ready to abandon the last great thing for the next great thing, we make all your
integrator, so whether it's OpenVMS,™ UNIX® or Windows NT,® no one's better at making it all work togethe

[illegible] Annual Computerworld reader poll. ©1997 Digital Equipment [illegible]

investments—past, present and future—work as one well-oiled machine. We were voted [illegible] systems
Find us at www.digital.com/mesh, or call 1-800-DIGITAL. And get ready to win in a networked world.

[illegible] Digital Equip[illegible] other names are trademarks or registered trademarks of the respective [illegible]

IT'S PAINFULLY SLOW, LEAVES A SLIPPERY TRAIL, AND HIDES UNDER A TOUGH SHELL.

MEET THE MOST COMMON SPECIES OF BUSINESS SOFTWARE COMPANY.

(DILLIUS DALLIUS IMPLEMENTUS)

At first glance, all software companies look equally nimble. Then the implementation drags on. Or their technology trails. And you realize what kind of species you're really dealing with. At Lawson Software, keeping our customers on the leading edge of technology is one of our biggest strengths. Our innovative business management systems are the first to utilize web technology, enabling our customers to share information more freely and cost effectively. And Lawson is the first to offer Self-Evident Applications,™ a new generation of enterprise software that practically eliminates training costs. At the same time, we're known for having one of the shortest client/server implementations in the software industry. How are we able to do it? By designing our financials, human resources, procurement and supply chain process suites to be open to all major technologies, we're able to make complex installations faster and easier. And we can offer our customers the flexibility to move to the next database, user interface, network or hardware platform that comes along. For a whole new species of software company, visit Lawson Software at www.lawson.com/guide or call 1-800-477-1357.

fig. 1

fig. 2

LEADING EDGE TECHNOLOGY WITHOUT THE ATTITUDE™

©1997 Lawson Software

LAWSON Software™

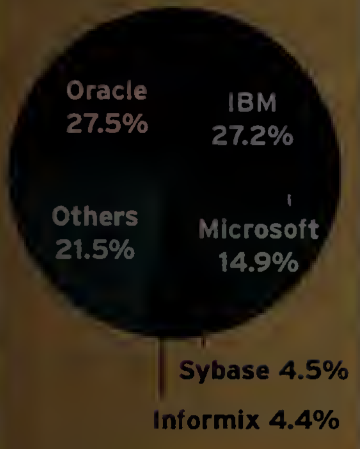
# Software

**Databases ♦ Development ♦ Operating Systems**

## Briefs

### SHARE HOLDERS

1997 worldwide database market share by revenue



**Total revenue: $6.6B***

* Includes mainframe and client/server databases

### Mining Oracle8

Oracle Corp. last month said it is working with seven data mining vendors to tie their software to an Oracle8 database upgrade that is due late this year. Oracle8.1 also will have expanded support for data mining. Vendors that signed marketing and development deals include Angoss International Ltd., DataMind Corp., Data-sage, Inc., Information Discovery, Inc., SPSS, Inc., SRA International, Inc. and Thinking Machines Corp.

### NCR brews server

NCR Corp. has announced an Enterprise JavaBeans Server for its Top End management middleware aimed at easing access to and management of World Wide Web-enabled data warehouses. Scheduled for delivery in the third quarter, the server will let customers integrate different databases via the Web and directly access online analytical processing functions within a data warehouse.

### Quarterdeck's loss

Citing price pressures, Quarterdeck Corp. expects an operating loss of several million dollars for its quarter ended last week. The PC utility maker said revenue will be as much as 25% less than the $20.6 million it reported in the previous quarter.

# Want to see that desk in 3-D?

▸ *Virtual office software may boost furniture sales*

*By Kim Girard*

AS FAR AS Jim Hook is concerned, designing office space for clients can be as complex as putting together Boeing 747s.

"It's a big orchestration of all of these variables. And if one isn't in place, 100 people could come into an office on Monday and have no place to work," said Hook, director of dealer development at Haworth, Inc., the world's second-largest office furniture maker.

But before the first piece of furniture even gets through a customer's door, Haworth's sales force will soon be using three-dimensional software to provide a peek at what the customer's offices will look like and the project's cost.

The Holland, Mich.-based company is in the final stage of testing Trilogy, Inc.'s configuration application, which also tracks the pricing of thousands of components in Haworth's customizable, build-to-order product line. The full Trilogy rollout will take place later this year on both notebooks and workstations.

Using customized software, salespeople will be able to move virtual furniture and wall units around a room to create workspaces on-screen. "You can zoom around. If you want to change something, you click on it and pull it," said Kris Manos, vice president of global product market development at Haworth.

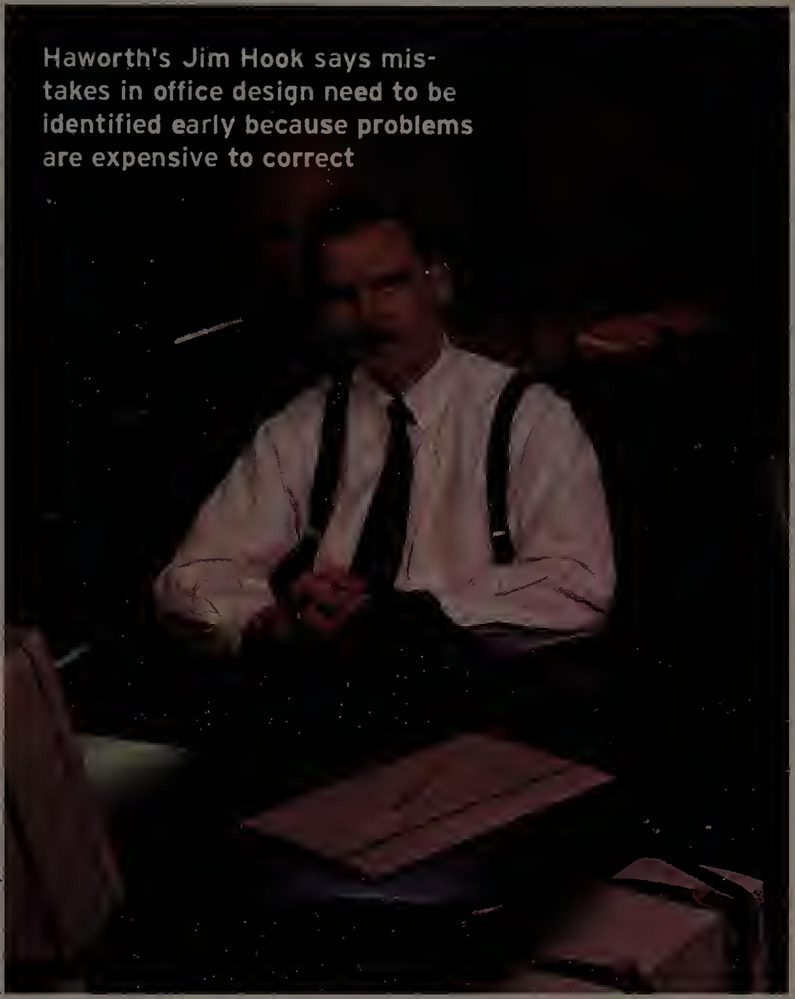
**Salespeople like to be able to move virtual furniture and walls.**

Mistakes in office design need to be identified early, Hook said, because "these problems are expensive to correct." The configuration software also should eliminate the need to consult an office designer before deciding on new furniture, he said.

The Trilogy configurator should reduce the number of sales visits required to make a deal from five to two by putting more information into the hands of the sales force, Manos said.

It might take a designer hours to route an electrical wiring layout to a salesperson. But a salesperson can use Trilogy to configure the layout in minutes, eliminating a lot of the back-and-forth between Haworth and the customer, Manos said. On a typical $15,000 project, the system also provides pricing estimates within $100, Manos said.

**Office design,** page 56



Haworth's Jim Hook says mistakes in office design need to be identified early because problems are expensive to correct

JOHN SOBCZAK/LORIEN STUDIO

# Three isn't a crowd when rolling out R/3

*By Craig Stedman*

NIBCO, INC. decided its SAP R/3 rollout was too big to be managed by a mere mortal. And two heads weren't deemed much better than one.

So Nibco, a $500 million maker of flow control products such as valves and pipe fittings, set up a team of three executives to jointly run its installation of SAP AG's application suite. They each took lead roles on different parts of the project, but all major decisions were made as a team.

"We thought this really begged for a different approach to project management," said Jim Davis, director of business development at Nibco and one of the three project leaders. "We needed good leadership covering every aspect of the project."

Davis was joined by Scott Beutler, another business executive, and Gary Wilson, Nibco's director of information services

**R/3,** page 56

### THREE FOR R/3

Nibco's SAP R/3 rollout was jointly managed by these executives:

| Scott Beutler | Jim Davis | Gary Wilson |
|---|---|---|
| Title: Electronic commerce team leader | Title: Director of business development | Title: Director of information services |
| Background: Plant, operations and business unit management | Background: Finance, strategic planning, business re-engineering | Background: Engineering, information technology management |

GLOBAL BUSINESS

# PeopleSoft catches up to rivals with 7.5

*By Randy Weston*
NEW YORK

PEOPLESOFT, INC. wants the whole world in its hands — especially businesses operating in multiple countries.

So the Pleasanton, Calif., software maker is adding new capabilities to PeopleSoft 7.5 to help multinational companies better manage business, regulatory and cultural differences among various countries.

One example is a new European payroll application that supports the new European Monetary Union and handles different payroll and reporting requirements in various European countries.

But PeopleSoft's global goals may be more a case of playing catch-up to its bigger competitors. Market leader SAP AG in Walldorf, Germany, and No. 2 player Oracle Corp., as well as most other enterprise resource planning software vendors,

**PeopleSoft,** page 56

# Trio manages R/3 rollout

CONTINUED FROM PAGE 55

(see chart, page 55). Wilson took the lead on technology issues, Beutler worked with Nibco's business units, and Davis focused on training end users and getting them ready for the change to R/3.

The team approach was driven partly by a decision to do a bold, one-day rollout of R/3's finance, manufacturing and sales management modules across Nibco's U.S. operations. The software went live in late December at the company's Elkhart, Ind., headquarters and at 10 manufacturing plants and four distribution centers [CW, March 16].

R/3 replaced a series of incompatible mainframe and minicomputer applications that were making it hard to run Nibco as a unified company. But the scope and complexity of the project cried out for multiple heads, Beutler said.

Implementing R/3 "consumes people," he said. "I only took Christmas Day off in December, and I just had a piece of the project."

Project management teams are becoming more common on big installations of R/3 and other enterprise resource planning applications, said Jim Shepherd, an analyst at Advanced Manufacturing Research, Inc. in Boston.

"You're talking about projects that touch nearly every business system and employee in the company," Shepherd said. "It's a huge task."

Although Nibco's three project managers split up their main duties, the division wasn't hard and fast. If roadblocks arose, leadership was passed around "to whoever seemed to have the right skill or the passion" to smooth things out, Wilson said.

**NO EGOS ALLOWED**

The trio also was committed to turning disagreements into consensus decision. "You really had to check your ego at the door," Beutler said.

Having such heavy business involvement in a technology project "was a big change for this IS organization," said Wilson, who spoke along with Davis and Beutler at an IBM conference in Orlando, Fla., last month. IBM consulted on the R/3 project, which took 29 months to plan and build.

Before Wilson joined Nibco in 1995 and helped launch the R/3 planning process, the company's information systems department "was used to doing IS-led projects," he said. "But those don't work now. IS ownership of projects is just doomed." □

WE

are project and risk management specialists, and the answer to your project's prayers. We know what works -- and what doesn't -- with a track record of elegant solutions that proves it.

GET

no-waste solutions and measurable results from our years of experience. From visible hard dollar cost avoidance to ensuring you achieve CMM Level III, simplifying complexity is our mission.

IT

doesn't matter how tough the project. We handle it all - processes and controls, planning, estimating and preparation for audits and reviews. It isn't Rocket Science. It's Project Management.

DONE

on time, done under budget and done right the first time. We provide meaningful information, not just data; applied education and training; not just "what-to", but "how-to". Done is processes established, estimates validated and risk management plans that work.

CALL AN ANGEL.
WE GET IT DONE.

Angel Group

PHONE 800.705.8801
sales@angelgroup.com

# Office design

CONTINUED FROM PAGE 55

Haworth's project is one of several the furniture company is relying on to stay competitive with No. 1 rival Steelcase, Inc. in Grand Rapids, Mich.

That company also is pushing cutting-edge technology for its sales force.

Overall, Haworth is revamping systems used to support its 250-member sales force, which logged $1.5 billion in sales last year. Steelcase had $2.4 billion in sales.

The complexity of office products and their pricing makes Haworth and Steelcase among the hottest users of high-tech selling tools, according to analysts at Gartner Group, Inc. in Stamford, Conn.

Like Steelcase, Herman Miller, Inc. and other competitors, Haworth is moving beyond the simple contact management software to a front-office system that tracks previous sales calls, shipping information and support requests.

Haworth now uses Saratoga Systems, Inc.'s sales force automation software, but it is considering replacing it with Oracle Corp.'s front-office application, said Scott Wentworth, Haworth's finance manager of sales and administration.

Other tools in the sales force arsenal include a marketing encyclopedia developed by Holland, Mich.-based EnCyc, Inc. Users can search and then cut and paste material to create proposals on a laptop.

"The key in all of this is giving better information to the field and giving it to them faster, which gives them, I hope, a competitive advantage," Wentworth said. □

# PeopleSoft

CONTINUED FROM PAGE 55

already offer multinational functionality to users.

British United Provident Association in London, for example, uses PeopleSoft 6.0 and has to manually calculate local value-added taxes and other country-specific regulations when a transaction crosses borders. That's a tough job for an organization that handles 11 million claims per year, 20% of which are in 34 other countries.

"Version 7.5 [will] allow us to automate business processes across countries," said Peter Harvey, international finance systems manager at the $2.5 billion health care organization.

Dennis Byron, an analyst at International Data Corp. in Framingham, Mass., said that without global features and functions, PeopleSoft couldn't be considered by most companies operating beyond North America.

Beyond the new global features, PeopleSoft is enhancing many of its applications and adding others, such as treasury management and performance measurement.

For Sony Pictures Entertainment, enhanced electronic data interchange and the ability to access more applications through a World Wide Web browser are welcome news.

The Culver City, Calif.-based studio is moving from Version 7 to Version 7.5. of PeopleSoft's application package.

"Online requisitions will help woo people into using our centralized corporate site," said Pamela Saraceno, vice president of payroll and disbursements at Sony.

Saraceno said Sony plans to eventually conduct all purchasing over the corporate intranet. That would mean production managers on specific films could log in requests on a laptop from a remote shooting site.

Saraceno said she would like to see PeopleSoft add more support for project-oriented businesses such as the film industry or construction. □

The **Power** of Information is in your hands.

Subscribe **now** and **save** over **80%**

## Read for Success

☑ 51 issues for $~~48~~. Now only $39.95

| | | |
|---|---|---|
| First Name | MI | Last Name |
| Title | | |
| Company | E-mail address | |
| Address | | |
| City | State | Zip |

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

## Read for Inspiration

☑ 51 issues for $~~48~~. Now only $39.95

| | | |
|---|---|---|
| First Name | MI | Last Name |
| Title | | |
| Company | E-mail address | |
| Address | | |
| City | State | Zip |

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

## Read for Advancement

☑ 51 issues for $~~48~~. Now only $39.95

| | | |
|---|---|---|
| First Name | MI | Last Name |
| Title | | |
| Company | E-mail address | |
| Address | | |
| City | State | Zip |

Address Shown: ☐ Home ☐ Business ☐ New ☐ Renew Savings are off the $4.00 cover price. *U.S. Only. Canada $95, Mexico, Central/South America $150, Europe $295, all other countries $295. Foreign orders must be prepaid in U.S. dollars.

B4D8 X

**COMPUTERWORLD**

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**
FIRST-CLASS MAIL PERMIT NO. 55B MARION OH

POSTAGE WILL BE PAID BY ADDRESSEE

**COMPUTERWORLD**
P O BOX 2044
MARION OHIO 43306-2144

Don't miss an issue.

Subscribe to Computerworld today!

Four ways to Subscribe:

① Fill out the attached postcard and drop it in the mail.

② Call us toll-free at:
800-552-4431
Outside U.S. (614) 382-3322

③ Fax your order to:
614-382-1058

④ E-mail:
circulation@cw.com

# Servers & PCs

**Large Systems • Workstations • Portable Computing**

## Briefs

**D.C. GLUT**

**The National Archives** is running **out of space** to store government records, **especially** those generated by **computer users.** The entire government sent just **90,000 computer files** over the past 26 years. Now the **State Department** and the **Treasury Department** together produce about **1.8 million files** per year.

Source: The National Archives, Washington

### New NEC servers

NEC Corp.'s Computer Systems Division in Mountain View, Calif., will ship two new servers in the Express5800 line this month.

Both servers run on 200-MHz Pentium Pro processors but can be upgraded to Intel Corp.'s Deschutes Slot 2 processors, expected in the second half of the year. The Express5600 HX4100 runs on one to four Pentium Pro processors and will sell for $7,872. The HX6100 uses up to six Pentium Pro processors and will sell for $22,565.

### Used PCs piling up

An International Data Corp. study says that supply and demand for used PCs will more than double from 1996 to 2002, with most being bought by educational facilities and smaller enterprises.

The Framingham, Mass.-based research firm said supply for used PCs will mushroom from 4.67 million units in 1996 to 11.21 million by 2002. Demand will lag slightly behind, growing from 4.61 million to 9.86 million over the same period.

However, less expensive PCs and increasing competition in the used market will begin to "squeeze used vendor margins over that time," the report said. Most of the market's growth will come from educational facilities and small businesses that operate on limited budgets, the report said.

# Remote backup stays in-house

*By Nancy Dillon*

THREE NEW PRODUCTS could make backing up off-site laptops and desktops a lot easier, especially for users who have shied away from outsourcing the task to third-party online services.

NovaNet-Web from Simi Valley, Calif.-based Nova-Stor Corp. is due by the end of the month, Network Data Manager (NDM) from San Diego-based Stac, Inc. is due in the third quarter, and Connected Online Backup (COB) 3.0 from Framingham, Mass.-based Connected Corp. is already shipping.

All three products support automated backup and retrieval on LANs and over telephone lines using compression and encryption. But unlike competing Internet-based backup services from companies such as Pittsburgh-based Safeguard Interactive, Inc., the new products let administrators manage the process in-house with data residing in company-owned facilities.

**REMOTE MANAGEMENT**

#### COMPANY POLICY

According to Jay Corinha, director of information technology business planning in the internetworking division of Stamford, Conn.-based GTE Corp., GTE chose Connected's COB 3.0 because of a company policy not to outsource network services.

"We take backup very seriously and weren't willing to go with an outside service. We wanted to run it ourselves and maintain complete control," Corinha said. The GTE group uses COB 3.0 to protect 1,400 end-user systems, 70% of which are laptops. Corinha estimated that on any given day, 35% of the users back up across a dial-up modem.

**Backup,** page 60

> "We take backup very seriously and . . . wanted to run it ourselves and maintain complete control."
> – JAY CORINHA
> GTE CORP.

# PC 99: Users have wish list ready

**What users want from their hardware in the next two years:**

- More management features
- More desktop-like features and easier access for mobile users
- Better integration among devices such as smart phones, handhelds, laptops and desktops

*By April Jacobs*

WITH THE DRAFT for PC 99 specifications freshly inked by Microsoft Corp., corporate users have their own ideas of what they would like to see from hardware makers two years down the road.

And while PC 99 — the guidelines for PCs that are due in late 1999 and 2000 — focus on more nitty-gritty technical issues such as the elimination of Industry Standard Architecture slots and processor and memory requirements, users have more bottom-line demands [CW, March 30].

Most of their issues center on getting better management features for the wide array of new devices appearing on the market, such as smart phones, handheld Windows CE-based devices and smart pagers.

Users said they want those devices to be better and more easily integrated with traditional devices, such as laptops and PCs.

"A lot of our workforce is mobile, and I would like to see them be able to do the same things on the road and in the office," said Corrado Del Rosso, product manager at Nabisco Foods, Inc. in Parsippany, N.J.

"For example, it would be nice to see the CE platform integrate with whatever the full-fledged desktop can give me today," he explained.

Del Rosso noted that the separation of the two makes them more complex to manage and leaves users struggling to integrate information among devices.

Chris Goodhue, an analyst at Gartner Group, Inc. in Stamford, Conn., pointed out that al-

**PC 99,** page 60

COMMUNICATIONS

# Compaq's 810 raises the handheld high

*By Rebecca Sykes*

COMPAQ COMPUTER CORP. last week announced a handheld PC series aimed at mobile business users.

A monochrome version of Compaq's C-Series Model 810 with 8M bytes of RAM is available for $599. It runs Microsoft Corp.'s Windows CE operating system and a MIPS-based RISC processor, according to a statement from Compaq.

#### MANY FEATURES

Model 810 contains an integrated 33.6K bit/sec. modem, a standard telephone jack, a speaker, a microphone and a display with two levels of backlighting.

The unit also includes handheld versions of Microsoft's Internet Explorer, PowerPoint, Word and Excel, Compaq said.

**Compaq,** page 60

# IBM proposes flexible software pricing

*By Jaikumar Vijayan*
LAS VEGAS

LET'S SIT DOWN and talk about it.

That's going to be IBM's approach as it moves toward more discretionary software pricing schemes to get users to try new applications on their mainframes.

Instead of having fixed pricing options, IBM will negotiate software charges on a case-by-case basis in emerging application areas such as electronic commerce and enterprise resource planning (ERP).

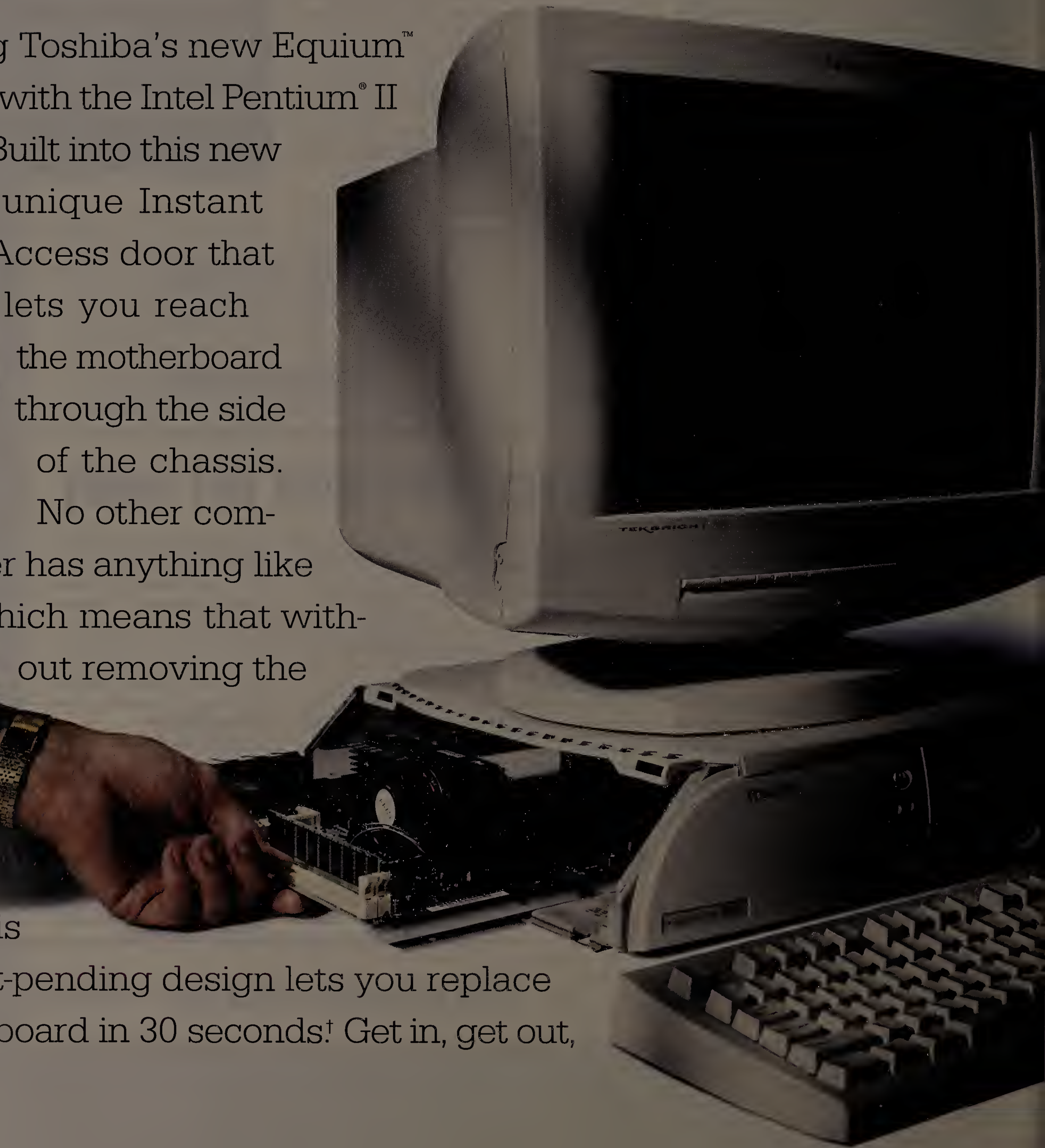
The company is considering similar incentives for users thinking of consolidating Unix applications on IBM mainframes, company officials said.

**IBM,** page 60

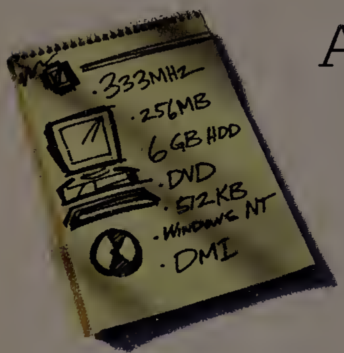
**IBM hopes a new pricing scheme will lure mainframe users to try:**

- Electronic commerce
- Enterprise resource planning (SAP R/3, Baan, PeopleSoft)
- Unix consolidation

# Replace motherbo
# Then go on to perf

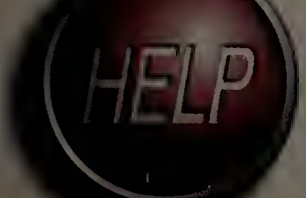


Introducing Toshiba's new Equium™ 7000 series with the Intel Pentium® II processor. Built into this new series is a unique Instant Access door that lets you reach the motherboard through the side of the chassis. No other computer maker has anything like it. Which means that without removing the monitor, this new patent-pending design lets you replace the motherboard in 30 seconds.† Get in, get out,



*Just give us your list. We can custom-configure desktops to your exact specs of memory, processor and depth of features.*

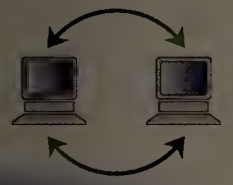
# ard in 30 seconds.
# orm other miracles.



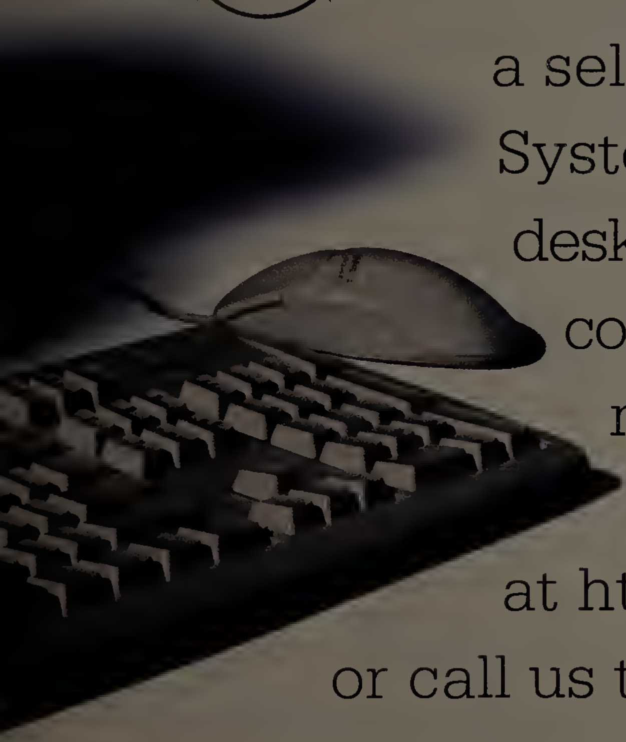
*An in-depth, built-in Expert Intelligent Help System solves user problems on the spot. Automatically or tutorially.*

*Limited workspace? Meet the first computers to function as desktops, towers, even wall-mounted units.*

get back to work. This modular design is just one more example of how Toshiba is taking the desktop seriously. Other examples? Flexibility in any working environment—your Equium can operate as a traditional desktop, a vertical tower, or as a wall-mounted unit for any wall or cubicle. Consistency of components means these systems share parts, so you can cut qualification times. They even feature a self-fixing Expert Intelligent Help System to reduce calls to your help desk. The most flexible, cost-efficient corporate PCs on the market. They're not miracles. They're Toshibas. For more details, give us a click at http://computers.toshiba.com, or call us toll-free today at 1-888-598-7802.



*Key components for both Equiums are 100% interchangeable. As for qualification? Test one, and you've tested them all.*



**EQUIUM**

Starting at

**$1299***

**Custom Configuration Options for 7000 Series:**

- 233MHz, 266MHz, 300MHz or 333MHz Intel Pentium® II processor
- 512KB cache**
- 16MB, 32MB, 48MB, 64MB or 128MB SDRAM (expandable to 256MB)
- 2GB, 3GB, 4GB, 6GB or 8GB HDD
- 24X or 32X CD-ROM, DVD or none
- 3.5" 1.44MB FDD or none
- Intel EtherExpress™ PRO10-100 network interface or none
- Expert Intelligent Help System**
- Intel LANDesk® Client Manager**
- DMI 2.0**
- Security features: chassis intrusion alert and password protection**
- Windows® 95 or Windows NT®
- 3-year limited warranty, 1st year on site**
- Optional TekBright monitors (15", 17")

In Touch with Tomorrow

**TOSHIBA**

© 1998 Toshiba America Information Systems, Inc. *Price for Equium 7000S part #1043U-0000, 233MHz, 32MB SDRAM, 2GB HDD, 1.44MB FDD, Intel Ethernet Network, Windows 95. Monitor not included. **Stand[illegible]d feat[illegible] 7000 [illegible]
†30 second time assumes no external system cables are connected to the motherboard. All prices, specifications and availability are subject to change. Reseller prices may vary. Equium is a registered tradem[illegible]k of Tosh[illegible] A[illegible] [illegible]
The Intel Inside Logo and Pentium are registered trademarks and MMX is a trademark of Intel Corporation. All other products indicated by trademark symbols are trademarked and/or registered by their [illegible]

# PC 99 wish list

CONTINUED FROM PAGE 57

though the Windows CE operating system used for handheld computers looks and feels like full-fledged Windows in some ways, there are many differences, including file format, that make it difficult and expensive to manage.

Users also want more unity in user interfaces for the devices.

"With all the different products [available], there is a lack of consistency between them in terms of user interfaces and compatibility," said Judy Wolterman, manager of information systems at Capital Services, a wholly owned subsidiary of General Electric Co. in Fairfield, Conn.

> **"With all the different products [available], there is a lack of consistency between them in terms of user interfaces and compatibility."**
> **- Judy Wolterman**
> **Capital Services**

Those inconsistencies make the new devices less valuable to business users because they must keep track of information flowing from too many places.

"As we move forward, there needs to be more standardization between digital devices," said J. Michael Stratton, asset manager at The Boeing Co. in Seattle.

### PC DREAMING

"I'd like to see PCs taking phone messages and other devices working together more easily to make them true communication tools," Stratton said.

But analysts said competition among vendors that want to differentiate themselves through richer feature sets, combined with the fast pace at which those devices are coming out, may hamper any attempts to bring them under a single umbrella.

"There is still a gap between desktop and mobile manageability, and its even wider for other devices like palmtops and things like smart phones," Goodhue said.

At a Gartner conference last week on reducing the total cost of ownership, Gartner analyst Howard Seabrook told attendees not to expect mature systems management products for mobile workers until 1999. ☐

# Remote backup stays in-house

CONTINUED FROM PAGE 57

The market for remote-user, backup software is expected to grow dramatically in the next few years, analysts said. That's because options for users at Fortune 1,000 companies have been limited until now.

Virginia Brooks, an analyst at Boston-based Aberdeen Group, Inc., said that last year, only 40% of Fortune 1,000 companies distributed backup tools to remote users and that typically the tools either weren't used at all or were used ineffectively.

"We have been using Zip drives, but they require end-user intervention and that can be a barrier," said Donna Gertz, manager of technical support for a Pittsburgh-based tax and audit office of Deloitte & Touche LLP. She is now evaluating online software that will help automate the backup process for 250 field agents.

"We needed a better system for getting our users back into productive mode as soon as possible after a systems failure. Systems that have crashed in the past have taken between one and three days to recover, and that's a lot of billable hours lost," Gertz said.

NovaNet-Web can back up data over the Internet, an intranet or any TCP/IP network.

It uses an incremental backup technology known as binary patching to speed the daily backup process. Binary patching works like a software patch and changes only the bits in each file that have changed since the last backup.

COB 3.0 and NDM differ from NovaNet-Web in that their incremental backup technology evaluates files as collections of small, discrete blocks rather than as a string of bits.

According to Fred Richardson, an analyst at NavStor in San Diego, binary patching can be up to 10 times faster than block-level, incremental backups. But he said the difference is hard to notice unless large amounts of data are being transferred.

NDM is the only product of the three to offer redundant file elimination. That feature can recognize redundant files on workstations and ensure that each file or changes are transmitted only once. ☐

**BACKUP PLANS**

All products listed support dial-up connections and can run on Windows NT 4.0 and Windows 95

| Product | Redundant file elimination | Price |
|---|---|---|
| **Connected Online Backup 3.0**<br>*Connected* | No | $20,000 per server; $189 per client |
| **NovaNet-Web**<br>*NovaStor* | No (due next version) | $495 for 10-user license |
| **Network Data Manager**<br>*Stac* | Yes | $500 per workstation; $100 per workstation after 1,000 users |

# IBM's new pricing scheme

CONTINUED FROM PAGE 57

Details of exactly how IBM will implement those schemes aren't yet fully available, said Mary M. Rose, a manager in IBM's S/390 software group. Rose spoke here two weeks ago during a session at Guide, Inc.'s large-system user meeting.

### COMPARING METHODS

Many licensing schemes today are based on the capacity of the supporting hardware rather than software usage. For example, users who run small applications on large mainframes are charged based on the size of the system as measured in MIPS. That means software licensing fees rise when users upgrade hardware to handle more applications.

Special bid licensing schemes will give users the potential to hammer out better deals in such situations, users and analysts said.

"If IBM really does this, it could get people to try new applications," on their mainframes, said Tim Koth, a technical systems manager at Trans World Airlines in Kansas City, Mo. For example, the ability to negotiate lower-cost software licenses could encourage mainframe users to adopt ERP applications, Koth said.

> **"If IBM really [implements the new pricing schemes], it could get people to try new applications" on their mainframes.**
> **- Tim Koth**
> **Trans World Airlines**

But there is a potential downside, too. The hassles involved in arriving at — and then managing — nonstandard special bid licenses could add more complexity to license management, said Jim Lackey, director of OS/390 operations for the provincial government of British Columbia. Lackey also heads a Guide effort to simplify software licenses [CW, March 23].

### GREATER APPEAL

Special bid pricing is often used by both hardware and software vendors to clinch large orders or retain big customers. IBM's move to offer similar deals when users try new mainframe applications is part of an ongoing effort to broaden the mainframe's appeal.

In the past few years, the hardware has gotten smaller, faster and cheaper as a result of technologies such as IBM's CMOS processors and Parallel Sysplex clustering.

Although hardware is cheaper, rising mainframe software costs acted to discourage new mainframe users.

David Floyer, an analyst at International Data Corp. in Framingham, Mass., said the proposed flexible pricing options will benefit users. "But that is not the only thing IBM needs to do," Floyer said. "They need to do things like bundling best-of-breed software with their operating system." ☐

# Compaq raises handheld

CONTINUED FROM PAGE 57

Compaq also plans a color version of the handheld, called the C-Series 2010C, which will have 20M bytes of RAM. The 2010C will use Extended Data Out memory or a PC card slot. It will be available next month.

Optional hardware for the C-Series includes a PCMCIA VGA card that was designed to let users create and display presentations with PowerPoint, displaying them on a large-format (640 by 480) monitor or projection system.

Third-party software for the C-series includes the following, according to Compaq:

- Odyssey's BizCalc, programmable business and financial software that emulates Hewlett-Packard Co.'s HP-12C business calculator.
- Physix's PocketChart, which lets medical workers complete an entire patient note, send prescriptions to the pharmacy as well as collect billing information.
- Puma's IntelliMigrate, which lets users transport existing data housed in older handheld models to Windows CE-based PC models. ☐

*Sykes writes for the IDG News Service in Boston.*

## NEW PRODUCTS

**PROCOM TECHNOLOGY, INC.** has announced Reliant 1000, a RAID storage array with an available Fibre Channel interface.

According to the Irvine, Calif., company, the array comes in three standard configurations: the 90G-byte, 10-drive system; the 270G-byte, 30-drive system; and the 450G-byte, 50-drive system. Each has a RAID controller and storage management software via SCSI and Ethernet. Pricing is $28,995 for a 10-drive system and $191,795 for a 50-drive system with dual Fibre Channel controllers.

**Procom Technology**
**(714) 852-1000**
**www.procom.com**

**MAG PORTABLE TECHNOLOGIES, INC.** has announced the Verity 690CDT and the Verity 685CDT, Pentium-based notebook computers.

According to the Santa Ana, Calif., company, the Verity 690CDT notebook has a 266-MHz Pentium processor with MMX technology from Intel Corp., 32M bytes of memory, a 3.2G-byte hard drive and a 12.1-in. SVGA color monitor with 800 by 600 resolution. The Verity 685CDT has a 233-MHz Pentium processor and a 2.1G-byte hard drive.

The 690CDT costs $2,999, and the 685CDT costs $2,699.

**MAG Portable Technologies**
**(800) 533-7515**
**www.magportables.com**

**STORAGE DIMENSIONS** has announced the SuperFlex AIT TapeArray, which incorporates Sony Corp.'s Advanced Intelligent Tape (AIT) technology.

According to the Milpitas, Calif., company, the array can have four or seven drives for tape-based backup of Windows NT, NetWare, Solaris, HP-UX and AIX systems. The array was designed to support a native transfer rate of 3M byte/sec. and throughput of 144G byte/hour.

A four-drive array costs $19,420, and a seven-drive array costs $31,898.

**Storage Dimensions**
**(408) 954-0710**
**www.storagedimensions.com**

**NEC CORP.** has announced the PowerMate Professional 9000 Series, workstation class PCs aimed at the computer graphics, design, digital content creation and animation markets.

According to the Mountain View, Calif., company, the workstations are dual-processor-ready and feature 266-, 300- and 333-MHz Pentium II processors. They incorporate high-end graphics cards from AccelGraphics, Inc. and NEC's full hardware and software manageability suite.

Pricing is $2,499 to $5,999.

**NEC**
**(888) 863-2669**
**www.nec.com**

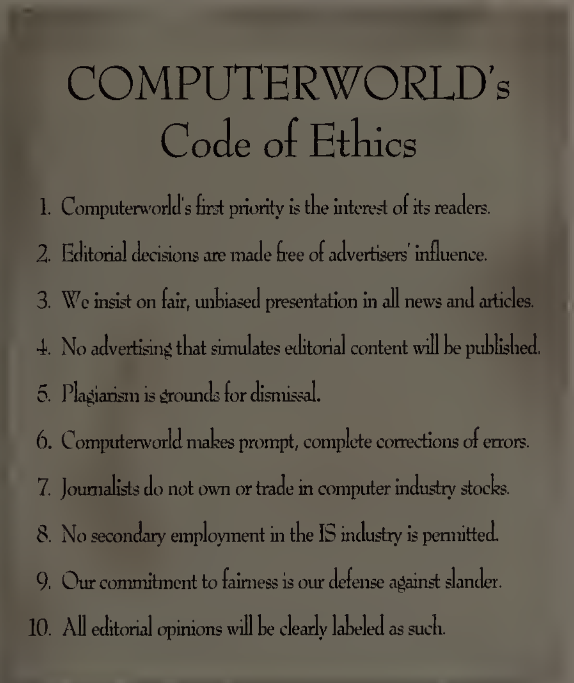
**MONORAIL COMPUTER CORP.** has announced the Monorail NPC 5000 and the NPC 7000, low-cost minitower desktop PC systems.

According to the Marietta, Ga., company, the NPC 5000 features a 200-MHz Pentium processor, a 2G-byte hard drive and 16M bytes of synchronized dynamic RAM (SDRAM). Both include Intel Corp.'s LanDesk 3.11 software and offer network administrators capabilities such as remote wake-up, remote boot and remote upgrade.

The NPC 5000 starts at $849, and the NPC 7000 starts at $1,249.

**Monorail Computer**
**(770) 980-0387**
**www.monorail.com**

Annual Job Satisfaction Survey
will be featured in
COMPUTERWORLD
April 20 in print and on the web
Deadline: April 16 at 3pm
1-800-343-6474, x8000



COMPUTERWORLD's
Code of Ethics

1. Computerworld's first priority is the interest of its readers.
2. Editorial decisions are made free of advertisers' influence.
3. We insist on fair, unbiased presentation in all news and articles.
4. No advertising that simulates editorial content will be published.
5. Plagiarism is grounds for dismissal.
6. Computerworld makes prompt, complete corrections of errors.
7. Journalists do not own or trade in computer industry stocks.
8. No secondary employment in the IS industry is permitted.
9. Our commitment to fairness is our defense against slander.
10. All editorial opinions will be clearly labeled as such.

Ralph Nader and the SPA debate proposed software license law Opinion, page 33

COMPUTERWORLD

The Newsweekly for Information Technology Leaders
News updates, features, forums: www.computerworld.com
Vol. 31 • No. 20 • 134 pages • $3/copy $48/year

Staffing woes deepen

Offshore talent pool costly, dwindling

Contract workers rake it in; pay jump to 9%

WILL LDAP ZAP X.500?

BIG BLUE STAYS TRUE TO DB2

Digital suit shocks Intel

Data warehouse nightmare

• Mergers cause major headaches for IS, end users

Tivoli users desperately seek support

Year 2000 glitches may be everywhere

• Phone infrastructure, medical devices at risk

We need IT leaders, not more IS managers. People with vision. Values Self-confidence.

WORDS WE LIVE BY. WORDS YOU WORK BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IS. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future.

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IS professionals like you live by.

Week in and week out, our editors and reporters call it the way they see it – on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IS.

It's no wonder over 152,000 IS professionals pay to subscribe to *Computerworld*. Shouldn't you? Order today and you'll receive 51 information-packed issues. Plus, you'll get our special bonus publication, *The Premier 100*, an annual profile of the leading companies using IS technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD
The Newsweekly for Information Technology Leaders

*Gateway Solo 5100 Portable*

# Pentium® II Processor.
# Enormous Display.
# Affordably Priced.
# All From Gateway,
# And All Yours.

# No, You're Not Being Greedy.

It's a no-compromises attitude, but why not? You deserve to get what you want, when you want it. Sure, other computer companies have Intel's new Pentium II processor Mobile Module. Some even have low prices. Others offer big screens. But Gateway gives you all three in one feature-packed machine.

Plus, support costs are reduced because many of our modular components are interchangeable among the rest of the Solo line. We call that Common Modularity. And all Gateway Solo portable PCs are custom-built and shipped direct.

Could you ask for anything more? Then go ahead. We're likely to give it to you!

*Isn't it great when you can meet your wants and needs at the same time?*

**GATEWAY™ Solo® 5100SE**
**Optimal Presentation Portable**

- 14.1" XGA TFT Active Matrix Color Display
- Intel® 233MHz Pentium II Processor with 512K Cache
- 32MB SDRAM and 2GB Ultra ATA Hard Drive
- Modular 8X min/20Xmax CD-ROM and 3.5" Diskette Drives
- Lithium Ion Battery and AC Pack
- Only 6.7 lbs and 1.6" Thin
- Microsoft® Windows® 95, Works 4.5 and Carrying Case

**$2899** **Gateway GoldValue Lease $102/mo.***

GATEWAY2000®

"YOU'VE GOT A FRIEND IN THE BUSINESS"®

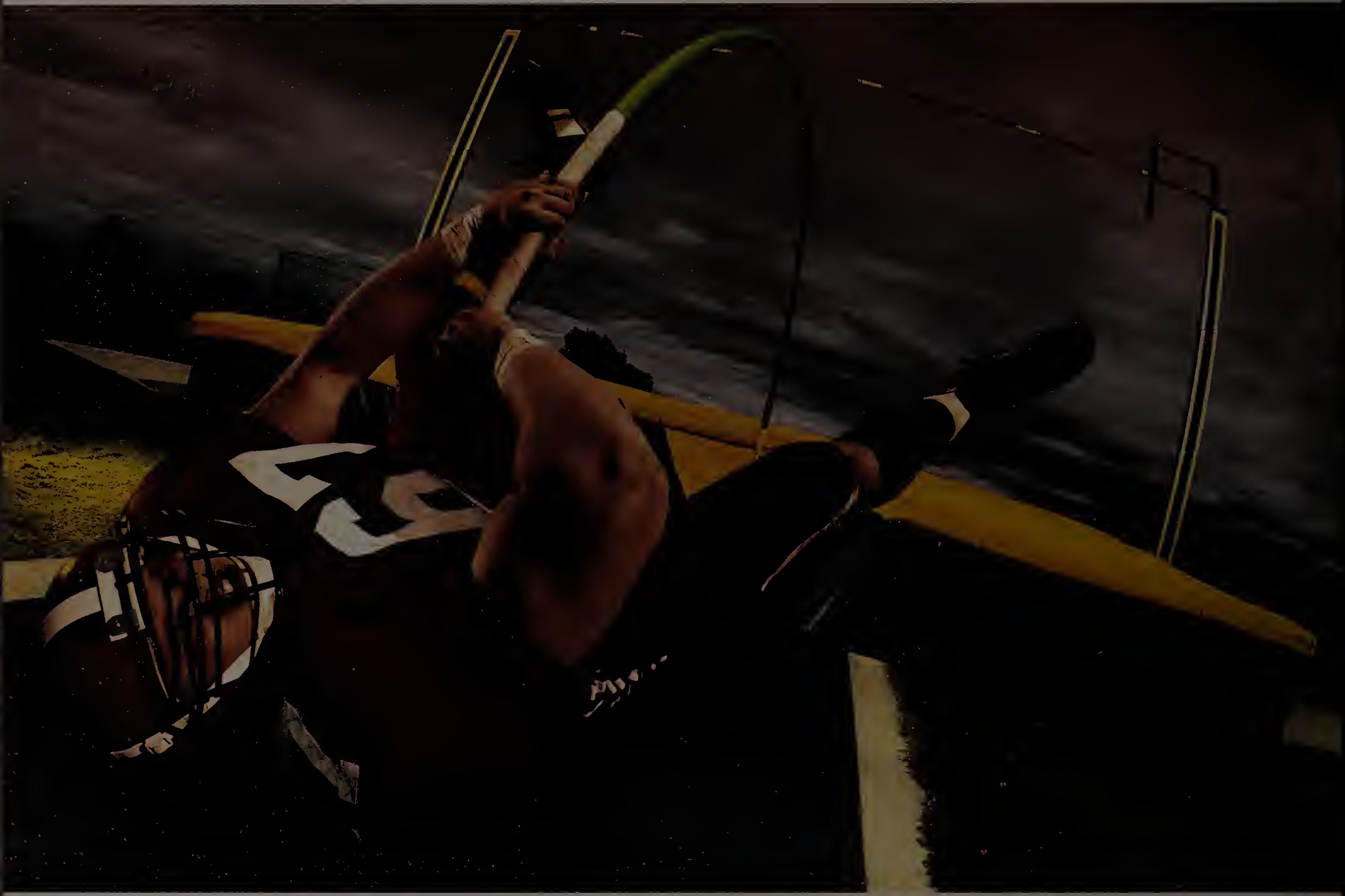
CALL 888-888-0382 www.gateway.com

Gateway 2000 Major Accounts, Inc.

MMX intel inside pentium®II

©1998 Gateway 2000, Inc. All rights reserved. Gateway 2000 Major Accounts, Inc. is a wholly owned subsidiary of Gateway 2000, Inc. Not all Gateway systems contain the Pentium II processor. The Intel Inside Logo, Intel and Pentium are registered trademarks, and MMX is a trademark of Intel Corporation. All other brands and product names are trademarks or registered trademarks of their respective companies. Some products and services may not be available for all international locations. Many Gateway products are custom engineered to Gateway specifications, which may vary from the retail versions of the software and/or hardware in functionality, performance or compatibility. All prices and configurations are subject to change without notice or obligation. Prices do not include shipping and handling or any applicable taxes. Call us for a free copy of our limited warranty. Our warranty gives you specific legal rights, and you may also have other rights, which may vary from State to State. Some States do not allow the exclusion or limitation of incidental or consequential damages so any limitation or exclusion may not apply to you. *Leasing arranged by independent leasing companies to qualified commercial customers. Lease payments based on 36-month term. Lease terms subject to change without notice or obligation.

It's impossible to succeed at data warehousing without the right database.



**NCR's Teradata® database.**

**Because it's a different game.**

To succeed in data warehousing, you need a database that's built for the job. A database that delivers maximum scalability and manageability. Plus world-class performance. Only one database is designed for exactly that—NCR's Teradata.

Start with a small datamart, and scale up to the biggest of data warehouses. What's more, only Teradata has the ability to scale in multiple dimensions. So lots of users can ask lots of complex business questions of massive amounts of data, any time they please. Yet still receive answers with mindbending speed. And Teradata does it all. while significantly lightening your administrative workload.

No wonder many of the world's biggest success stories already use NCR's Teradata. We're talking about the four biggest retailers, the top three airlines, and two of the top three banks in the U.S. Not to mention fifteen of the world's top communication companies.

Let us show you how the only database truly built for decision support can turn your data into a real competitive edge. To help you get off the ground, we'll even give you a trade-in credit on your old database.

Just give us a call at 1-800 CALL-NCR. Or drop by on the web at www.ncr.com/teradata.

Transactions in the Age of the Consumer

Teradata is a registered trademark of NCR Corporation. © 1998 NCR Corporation. All rights reserved.

# Briefs

## Telecom service

NCR Corp. in Dayton, Ohio, last week announced a pair of data warehousing hardware and software bundles aimed at telecommunications companies. The ChurnSentry and GrowthAdvisor packages can be used to identify telephone customers who are likely to defect. The two bundles are built around the company's Teradata database and WorldMark servers. Pricing starts at $850,000.

## Ranking customers

Wakefield, Mass.-based Gentia Software, Inc. last week announced a software package that combines its multidimensional data analysis software with an application that automates the "balanced scorecard" approach to measuring business performance. Pricing for the Gentia software starts at $250,000 for 50 users.

## Data mart adds mining

Broadbase Information Systems, Inc. in Menlo Park, Calif., last week released an upgrade of its packaged data mart software with new built-in data mining capabilities. TurnKey Data Mart 1.2 includes a starter kit of data mining algorithms for use in predicting customer buying habits, according to the company.

### Warehousing Bigfoots

Some records set by decision-support databases:

- **Most data in one database:** Sears, Roebuck and Co. (4.63T bytes)
- **Most rows of data in one database:** Wal-Mart Stores, Inc. (50 billion)
- **Biggest workload:** JC Penney Co. (784 concurrent query/maintenance operations)
- **Most data in a group of databases:** The Dialog Corp. (6.3T bytes)

Source: Winter Corp., Boston

# Warehouse care: Keep costs healthy

▸ *HMO tracks trends, risks in claims data*

*By Linda Wilson*

AETNA U.S. HEALTHCARE'S business strategy is painfully obvious: Provide the best care at the lowest cost. And that requires access to lots of information.

So much information — more than 300 million rows of claims data alone — that the health maintenance organization is building a data warehouse to take advantage of it.

The warehouse, which will be 2T bytes when it is complete next year, is powered by an IBM RS/6000 SP 20-node parallel processor to overcome performance problems typical of large warehouses.

"Managed care is all about data and information to determine what works in improving outcomes and the cost of health care," said Dr. Nicholas Hanchack, president of U.S. Quality Algorithms, Inc. (USQA), the Blue Bell, Pa.-based Aetna affiliate that is building and will maintain the warehouse.

USQA monitors quality and costs. "One of the key premises is that quality care costs less," Hanchack said.

The warehouse already contains data — such as medical claims, laboratory test results, hospital discharge data and demographic information — from three of Aetna's insurance lines. A fourth, indemnity, will be added this year and next. USQA declined to provide the costs of the system.

About 400 regional health care analysts from USQA have been tapping in to the ware-

**HMO's warehouse,** page 68

COMMENTARY

# Call in the auditors

SHAKU ATRE

THE RISKS CAN BE significant when deploying data warehouses. In fact, they become positively daunting as costs rise.

Contemplating new user analytics, techniques for requirement analysis, modeling techniques, architectures and technologies can make for nervous systems managers and business partners.

So before your data warehouse project spins out of control, get a sanity check and commission a systems audit. That outside perspective will help you manage the project risks.

An audit must review all pertinent aspects of a data warehouse project, including business, management and technical variables. You'll have to budget and plan for it, oversee it and make sure it includes everything it should.

Budgeting for an audit depends on factors such as scope, complexity and whether your company has an internal quality team that could do it and would probably charge less than outside consultants. As for timing, plan for the audit at the project's conception if you can. Also consider it as a midcourse correction if you get into unanticipated trouble.

### HOW IT WORKS

There are at least 20 variables for which risk must be assessed. They range from project and team management to

**Atre,** page 68

"Before, we just did a spray-and-pray approach. . . . This way we can target our marketing."
– Gloria Castro, Brooklyn Union Gas

BRIAN SMALE

# Beware of marts, experts agree

*By Leslie Goff*

DATA MART TOOL vendors may be their own worst enemy.

Eager to sell targeted products for gathering, cleansing, normalizing, mining and analyzing data, data mart vendors have frequently sold information systems organizations a bill of goods, analysts and IS managers say. Their own hype has almost cannibalized the warehouse market.

TECH ANALYSIS

### TOP-DOWN APPROACH

"A lot of untruths are being propagated in the market, and part of it is vendor-driven by the makers of lower-end tools that can't scale. I think they will do anything to undermine [a top-down] approach," said Janelle Hill, research director of strategic data management at Gartner Group, Inc. in Stamford, Conn. "The whole marketing appeal of 'faster, smaller, cheaper' falls on very receptive ears."

In fact, Hill estimated that when data mart decisions are made tactically, IS ends up with algorithms and data models that are obsolete within 18 months. As business requirements change and end users need to look at data in new ways, the business rules and queries can't be easily altered. So even if a data mart yields some short-term strategic value, "IS has spent a lot of money on something that it will have to retire, and it will probably not see a real return on the investment," Hill said.

Gartner Group recommends a top-down approach, which means starting with a data warehouse and later adding data marts and data mining tools. Yet a bottom-up implementation, which starts with a data mart, has found receptive users because of a misconception that they either must model all the data in the enterprise at once or build departmental marts, Hill explained.

But users can, and should, consider building the data warehouse on a subject-by-subject basis instead, Hill said. Customers, sales and budgets are good places to start.

**Beware,** page 68

The SAS®

*How can we improve customer retention?*

*Who are our hot prospects?*

*What are the key demographics of our major markets?*

*Is our new advertising working?*

*Is credit card fraud on the increase?*

**Data Mining Solution**

# Discover the Diamonds in Your Data Warehouse

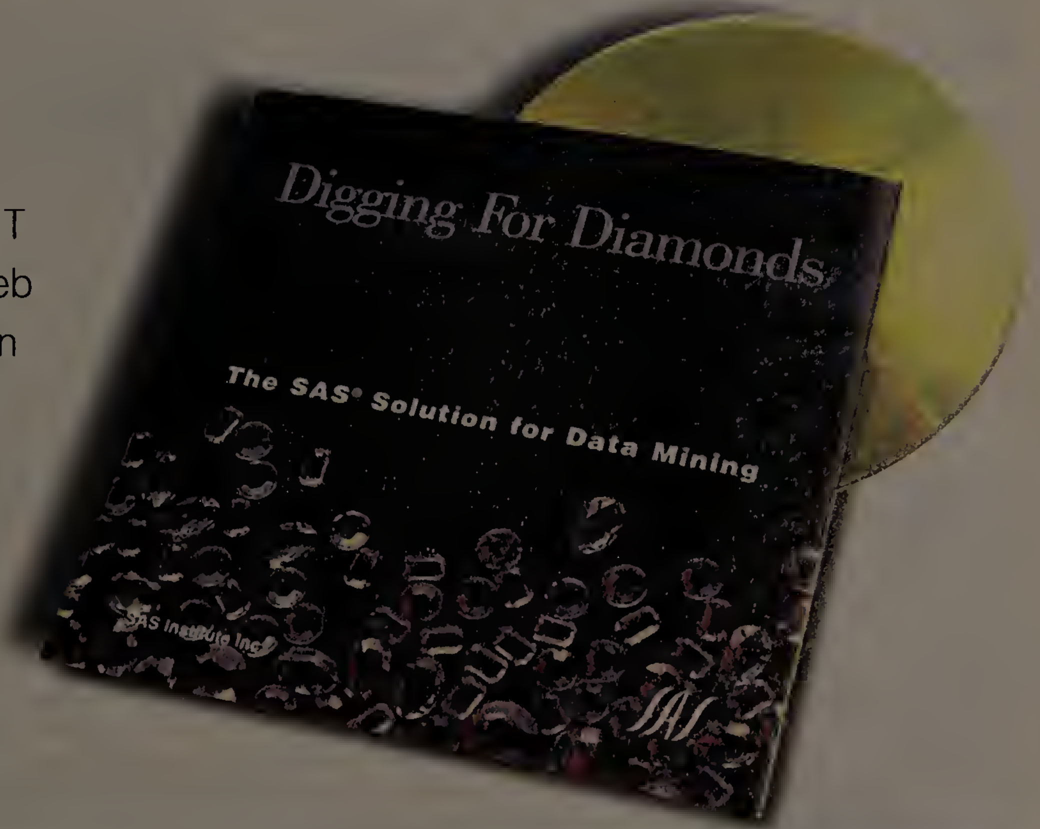
Introducing the first-ever, fully integrated data mining solution…one that maximizes your return on investment in data warehousing and data marts—as decision makers exploit your customer data for competitive advantage.

SAS Institute, for 20 years the leader in data discovery, provides the most complete and reliable data mining solution for modeling, measuring, and enhancing the profitability of your business. This Web-enabled, point-and-click approach lets you employ OLAP, neural networks, churn analysis, and other analytical and visualization techniques to improve customer retention, target key prospects, profile market segments, detect fraud, analyze customer response, and much more.

## *Begin Your Discovery with our Free Web-Integrated CD ROM*

*Digging for Diamonds: The SAS® Solution for Data Mining* lets you explore data mining from both a business and an IT perspective. And it's linked directly with our World Wide Web site, so you can continue to make new discoveries and gain fresh insights.

To request your copy, visit SAS Institute at www.sas.com/datamining/ or give us a call.



**SAS Institute Inc.**

**The Business of Better Decision Making**

E-mail: cw@sas.com www.sas.com/datamining/ 919.677.8200 In Canada 1.800.363.8397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1997 by SAS Institute Inc

# HMO's warehouse

CONTINUED FROM PAGE 65

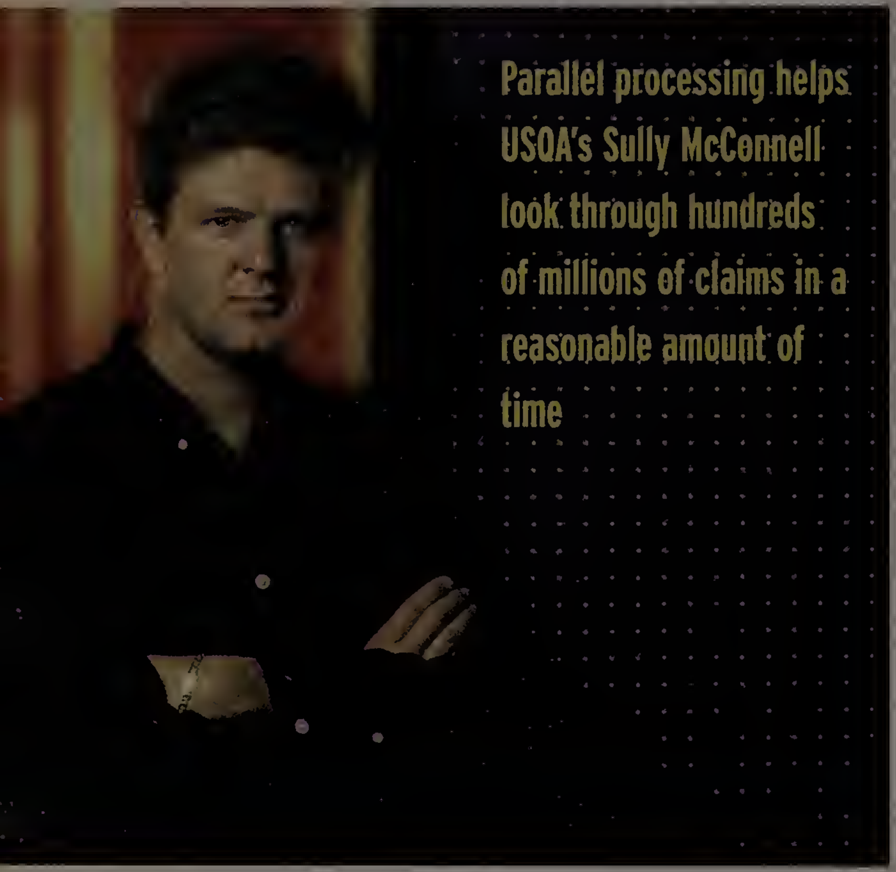
house for about a year, pulling information to study trends related to the cost and use of medical services.

Users can look at standard reports or build their own using Managed Care Monitor, which the systems department built using two products from Seagate Software in Toronto: Holos, a relational online analytic processing environment, and Crystal Reports, a report writer.

USQA this year is using the warehouse to build a medical history of enrollees by linking records of medical claims across its insurance products.

Because transaction systems for the various lines represent people differently, USQA developed a program to match records by analyzing fields such as name, address and Social Security number.

Sully McConnell, director of the data warehouse at USQA, noted that parallel processing is an enormous benefit in this process, which he expects will be finished by midyear. "We have to look through hundreds of millions of claims. If we ran it on a single CPU, it would take forever," he said.



Parallel processing helps USQA's Sully McConnell look through hundreds of millions of claims in a reasonable amount of time

KEVIN MONKO AND KELSH WILSON

### RISK CATEGORIES

Another big project, now running on the mainframe but expected to go into production in the warehouse this month, identifies members who have any of 65 chronic diseases and assigns them to a risk category based on the severity of their illness. The program finds these members by analyzing claims data and assigns the risk level based on USQA algorithms.

Using this information, Aetna encourages enrollees to get ongoing outpatient health care to keep their illness in check.

"Our goal is to predict who might be hospitalized before hospitalization occurs," Hanchack said. By doing so, Aetna hopes to treat patients in less-costly outpatient settings.

Before choosing the warehouse system, USQA wanted to test its performance. It set up a 1T-byte database of real data (stripped of names) and 33 concurrent users at an IBM testing facility, the Teraplex Center, in Poughkeepsie, N.Y. "We do complex queries, and this allowed us to bring our own workload and test it with multiple users," McConnell said. ☐

---

*Wilson is a freelance writer in Glen Ellyn, Ill.*

---

# Atre: Call in the auditors

CONTINUED FROM PAGE 65

metadata use and physical database design.

The audit needs to set up a matrix that defines low-, medium- and high-risk conditions for each variable, studies the project and determines how much risk there is for each variable. For example, with metadata use, a low risk would be where metadata is fully supported; a medium risk would be limited support; and a high risk would be no support. Some guidelines for getting started include the following:

- **Hire an experienced external partner.** Don't ask the project manager or a senior team member to perform the audit. They are too close to the project and may be politically constrained. You need an objective view. Engage either your organization's internal quality team (if it's objective enough) or hire a consulting group.
- **Make sure the auditors have full access to everyone they need to talk with, including users.** The auditors should ask them about their overall business requirements, long-term goals, issues and concerns. That will help you determine how useful the data warehouse will be and what the potential issues will be. It also helps determine if you have captured the requirements accurately.
- **Review the skills of your data warehousing project team.** The audit should verify that the people have solid business and technical experience and that the team is well-balanced, with sound analytical, modeling and project management skills.
- **Make sure the audit reviews the business requirements** and matches them against the proposed project deliverables. Measure success by how well the results match the predefined requirements.
- **Make sure the auditors review project management practices, too.** Is there a detailed project and deliverables plan? Is the project plan used — and revised when necessary? Are there regularly established user reviews and meetings?
- **Try to perform the audit during the second third of the project's first implementation phase.** That gives the project staff enough time to develop a strategy and execute some deliverables. If the project has had delays getting to that point, evaluate it anyway; the delays may signal serious problems. An audit may help pinpoint the problem areas and recommend timely solutions. ☐

---

*Atre is president of Atre Group, Inc., a Port Chester, N.Y., consultancy that specializes in data warehousing. Her E-mail address is shaku@atre.com.*

---

# Beware of mart tools

CONTINUED FROM PAGE 65

There is evidence that more companies are adopting the top-down approach.

Data warehouses that are larger than 1T-byte will make up 17% of all warehouses this year, from 7% last year, indicating that much more data is being stored centrally and feeding into downstream data marts, said John Ladley, a senior program director at Meta Group, Inc. in Burlingame, Calif. The figures are from a Meta Group poll of attendees at last month's Data Warehouse World conference.

"I don't hear a lot of vendor bashing, but I am hearing regret and hindsight regarding developing a bunch of separate data marts," Ladley said. "I am also hearing a lot of IS organizations trying to convince the business side that these [data marts] need a much higher level of integration."

In the past five years, Xerox Corp. has built a multitier architecture of 45 data warehouses and marts, including one data mart that supports profit-and-loss decisions by business units. On that project, the 'faster, smaller, cheaper' message initially was appealing, particularly because the vendor had promised scalability. But results weren't optimal.

Carl Cichetti, a manager at Xerox Information Management in Rochester, N.Y., declined to name the vendor or the product but said there were a lot of problems. "The technology was more difficult to deal with than we had expected, didn't live up to the promises made and was high-maintenance. When we tried to have a lot of business rules and complexity, it really pushed the limits of the technology," he said.

Xerox has since adopted a process to find tools that are scalable and that fit into Xerox's multitier architecture.

"Business needs can change quickly, so you need the framework to manage business and technology changes. And to do that, you really need an infrastructure," Cichetti said.

Brooklyn Union Gas, a Brooklyn, N.Y.-based utility, is preparing to roll out a warehouse that will better segment potential customers. The utility uses Sybase, Inc.'s IQ as the database engine and SAS Institute, Inc. tools for data gathering, cleansing and modeling.

Gloria Castro, manager of information product solutions, says the utility will use its warehouse, which it is building with Price Waterhouse LLP, to combine internal and external demographic information on customers. It aims to get a picture of who, for example, rents vs. owns their home and how profitable they might be over time. Analysts can then assess who would buy certain products, such as maintenance contracts.

"Before, we just did a spray-and-pray approach — we'd market our whole customer base with the same promo, cross our fingers and wait for a 1% to 2% response rate," Castro said. "This way we can target our marketing and hope to increase the response rate."

Ultimately, Hill said, "Data marts have run a high risk of jeopardizing the future of data warehouses, but I think that we are far enough into the technology now to demonstrate that this approach is wrong, and we will experience a resurgence of interest in data warehousing." ☐

---

*Goff is a freelance writer in New York.*

## A way to start with marts

**Not all experts say you need to build a data warehouse first.**

**Data marts in themselves can be an effective strategy as long as there is a road map that indicates what different departments have developed and offers a means to access the data in a data mart, according to London consultancy Ovum Ltd.**

**That kind of setup is known as federated data warehousing, where common metadata — an accounting of what is where — is available to people throughout a company.**

**New technology will enable the federated model. Some data mart tool kits from vendors such as D2K, Inc., Informatica Corp. and Sagent Technology, Inc. offer good support for federated metadata, says David Wells, a principal consultant at Ovum. Also, Microsoft Corp.'s SQL Server 7 database, due by year's end, has built-in data mart building tools and metadata capabilities.**

**— Anne McCrory**

the

**Right**

**Point your developers in the right direction to save coding time and reduce maintenance costs.** Rogue Wave's prebuilt software parts for C++ and Java are tested, proven, and built on industry standards. Our libraries are integral to the applications of many of the world's largest companies, handling database access, multithreading, network communications, and integration between C++ and Java apps in complex hardware and software environments. Our Stingray product line delivers power and productivity to developers working exclusively in the Windows environment.

**Rogue Wave** can help improve your bottom line by speeding up your development and making software reuse a reality.
>*The right direction is just a phone call away.*

***direction***

**www.roguewave.com**

call us at 800.487.3217
303.473.9118

The Software Parts Company Rogue Wave SOFTWARE

## Managing

The year 2000 problem means that some IS projects may have to be placed on the back burner. But don't just set priorities . . .

# Put your foot Down!

*By Kathleen Melymuka*

AT NATIONWIDE FINANCIAL SERVICES in Columbus, Ohio, President Joe Gasper took a unique approach to setting and sticking with the year 2000 problem as a priority. At a companywide meeting, he stated that year 2000 was the No. 1 priority and made each manager stand up and repeat it.

"He wanted to make sure the businesspeople got it as well as the IT people," says Brian Webb, director of data and applications engineering. "So when the IT people said, 'We can't do that because of year 2000,' they would get it."

But setting priorities is seldom that efficient or that effective. At the Miniature Precision Bearings division of MPB Corp., most of the year 2000 work is complete because the six-person information systems steering committee made it a top priority last year, even at the expense of a new order-entry system, which was put on hold.

But that was only the beginning. Despite the year 2000 priority, businesspeople tried to get IS manager Rick Flagler to slip their own pet projects into the queue throughout the year. He was able to hold the line only by letting the IS backlog balloon from 50 to 200 projects.

Year 2000 pressures mean a lot of other projects have to wait these days. A recent survey of year 2000 project directors by the Information Management Forum found that conflicting priorities was the top impediment to progress on year 2000 work. That raises the issues: Who sets priorities and how, and more important, who enforces them?

The truth is, companies have never been good at setting IS priorities, and they're even worse at living with the priorities they set. "That rehashing on a constant basis is a way of life and an issue in corporate America," says William Ulrich, president of Tactical Strategy Group, Inc., a Soquel, Calif., information technology consulting firm. "It's a common problem that people just decide to change things."

No matter what kind of system your company has on paper, chances are the buck actually stops at the IS manager who is forced to play arbiter, cajoler and enforcer, continually renegotiating decisions that have been made already.

In the best of times, that

**YEAR 2000**

**Joe DiBenedetto of J&R Music and Computer World: "When push comes to shove, I guess I would have to say, 'We cannot do this and do year 2000 remediation as well' "**

BRAIN SMALE

## A FORMULA FOR PRIORITIES

Whether you set IS project priorities alone or as part of a committee, a reasonable way to approach it is to identify your mission-critical business functions and map IS project proposals to the functions they support. You can do that manually or with automated tools. Once you do, IS project priorities fall into place around business priorities.

Developing and sticking with an IS prioritization model locks in decisions and the reasoning behind them and enhances the perception that IS understands business issues. It will help you make sure your year 2000 priority stays a priority.

IS consultant Lois Zells at Lois Zells & Associates uses the matrix at right to help clients prioritize projects.

| CRITICAL SUCCESS FACTORS (CSF) | | APPLICATIONS | | | |
|---|---|---|---|---|---|
| | | APPLICATION 1 | APPLICATION 2 | APPLICATION 3 | APPLICATION 4 |
| A. Product quality | 42% | 5<br>42% | 1<br>42% | 3<br>42% | 1<br>42% |
| B. Speed to market | 14% | 4<br>14% | 9<br>14% | 0<br>14% | 9<br>14% |
| C. Order entry | 24% | 5<br>24% | 1<br>24% | 3<br>24% | 5<br>24% |
| D. Customer service | 20% | 3<br>20% | 1<br>20% | 5<br>20% | 3<br>20% |
| TOTAL | 100% | 446<br>34.2% | 212<br>16.3% | 298<br>22.9% | 348<br>26.6% |

Copyright Lois Zells & Associates, Inc., Phoenix

**1** Identify the "critical success factors" (CSF) or functions critical to the success of your business, such as speed to market, customer service and order entry.

**2** Assign each CSF a percentage of your business pie based on its relative importance to the business. (The percentages will add up to 100.)

**3** Map each project proposal to each CSF, ranking them from 1 to 10 based on how directly they support the CSF. (Example: Enhancements to a call center might score a 5 in customer service but a 0 in speed to market.)

**4** For each proposal, multiply the CSF percentage by the ranking. (In the example at left, for Application 1, multiply 5 by 42%, 4 by 14%, 5 by 24% and 3 by 20%.)

**5** Add the results for each application proposal and prioritize them from highest to lowest number. (In the example, the priority order is Application 1, Application 4, Application 3, Application 2.)

makes effective project management impossible. This year, it's threatening to swamp the most pressing priority corporate America has ever faced.

"It is staggeringly unbelievable," Ulrich says. "Management is expecting people to do all this year 2000 work and all the other work at the same time. What they're not thinking through is that other projects can slip, and year 2000 can't."

### ONE-MAN SHOW

Companies prioritize in different ways. Smaller firms tend to take the benevolent despot approach. At J&R Music and Computer World, Inc., a privately owned New York retailer with 800 employees (unaffiliated with this newspaper), MIS director Joe DiBenedetto plans to spend 90% of this year's IS budget on year 2000. That's pretty much his call because setting priorities for the six-person IS department is an informal process, and DiBenedetto, working with the owner, runs the IS show.

"You have to look at what is crucial to the operation of the business, and those areas have to be addressed first," he says. "If those interfere with projects everybody wanted, so be it."

Concentrating on year 2000 means other projects won't get done. "There are always enhancements we're making to stay competitive," DiBenedetto says. "Some of those enhancements just have to wait."

DiBenedetto is willing to put his foot down to enforce his decisions. "When push comes to shove, I guess I would have to say, 'We cannot do this and do year 2000 remediation as well,' " he says.

### MORE METHOD, MORE MADNESS

Larger companies often have much more formal systems in place. But in the end, the success or failure of priorities has less to do with how you set them than whether you stick with them. At Yankee Energy Systems, Inc. in Meriden, Conn., Scott Waleski's 30-person staff is well along in year 2000 work, which has required only about 15% of this year's IS budget. "I've had excellent support from the CIO and the vice president of administration," says Waleski, director of IT services. "Both are very aware of the problem. Our CEO is very tech-savvy."

That's lucky for Waleski because at Yankee, even though an eight-person executive committee uses a fairly complex system to rank project proposals, top executives for the energy distributor and consultancy can overrule the committee's decisions. "The executives may bump a project up," Waleski says. "If an executive makes the priority high enough, it gets done."

Ulrich says that's common. "That's what happens most of the time. They go through an elaborate planning process, and then at the top level or a few tiers down, they undo it."

At MPB, in Keene, N.H., the IS steering committee struggles with the company's priorities. "Everybody comes in and wants everything," Flagler says. "We wrestle over resources. In any year, inevitably we don't have enough."

Last year, the committee reached consensus on about a half-dozen top-priority projects, including year 2000. Though you could make the case that six top-priority projects is an oxymoron, it isn't unusual, says Lois Zells, principal of Lois Zells & Associates, Inc., a Phoenix IS consulting firm. Zells says that when she talks with groups of IS people, she asks them to raise their hands if they're working on more than one No. 1 priority project. "They all raise their hands," she says.

### SUBVERSIVES IN THE BUSINESS

Six top priorities wasn't the only problem for Flagler and his 12-person staff, though. Throughout the year, businesspeople continually tried to subvert the list by advocating their own nonpriority projects. "It's a tough call when you have customers who want to do new and exciting things," he says. "People will frequently say, 'This is going to make the month of October.' "

So despite the committee's prioritizing, Flagler ends up single-handedly negotiating countless requests. "When you get to the trenches, it gets down to me and the departmental manager," he says.

### NO-NEGOTIATION POLICY

A real year 2000 crunch can motivate top management to take priorities seriously. At Dep Corp., a manufacturer of health and beauty aids in Rancho Dominguez, Calif., a well-educated top management established a no-exceptions year 2000 priority and stuck with it.

"I had educated my boss, the CFO, and he carried the ball, telling everybody that if we don't get the year 2000 problem solved, there won't be a company to take advantage of all the other projects," says Oleg de Bode, director of the 10-person IS department. "This was one of those corporate decisions made at the highest level. Once that fiat came down, everybody fell into line."

Because of top management support, de Bode is not beset by users trying to slip in projects. "They're not even being forwarded to MIS," he says. The result has been a single-minded focus with virtually the entire IS budget directed at year 2000.

Companies need to learn to prioritize (see formula above), and they need the guts to stick with the priorities they set. Once you've established a model for setting priorities, you've got to live and die by that model. "Any time something gets shifted around," Ulrich says, "you need to stick that model in the face of the person making the decision and say, 'Are you willing to circumvent this?' "

It won't hurt to remind the would-be transgressor that the model will be Exhibit A if the company gets hauled into court over year 2000. ☐

---

*Melymuka is* Computerworld*'s senior editor, management.*

# YEAR 2000 SCOREBOARD

An occasional series on year 2000 trends, issues and statistics

## Speeding up compliance

The Automotive Industry Action Group (AIAG) Year 2000 Task Force has implemented a comprehensive plan to get automotive suppliers cracking on year 2000 compliance [CW, March 9].

The key to the plan is a comprehensive year 2000 survey to be completed by more than 50,000 supplier sites worldwide. But for awhile, it appeared that the task force was going to be stymied by inadequate response. Neither the AIAG, in Southfield, Mich., nor the Big Three U.S. automakers will say just how bad response has been, but industry analysts put the rate in the single digits.

But at least one of the Big Three is lighting a fire under suppliers. Roger Buck, manager of the year 2000 project at Chrysler Corp., says that automaker has begun delivering a periodic report card to the top executives of suppliers' parent companies to let them know how the suppliers are doing with year 2000.

The report card uses the suppliers' own survey responses to rank each site as a high to low risk on its year 2000 progress in eight categories: business systems, technical infrastructure, PCs, its own suppliers, other business partners such as banks, its products, research centers and test equipment, and environmental operations such as security systems. If no survey has been received, all categories are automatically rated high risk.

The report card goes to the company's CEO and, in the case of parts suppliers, also to the person in charge of all the company's sales representatives.

The first reports went out in late February. They will be followed up by face-to-face meetings with key suppliers, who normally meet with Chrysler buyers every 60 to 90 days. "The report card will be part of the discussion," Buck says.

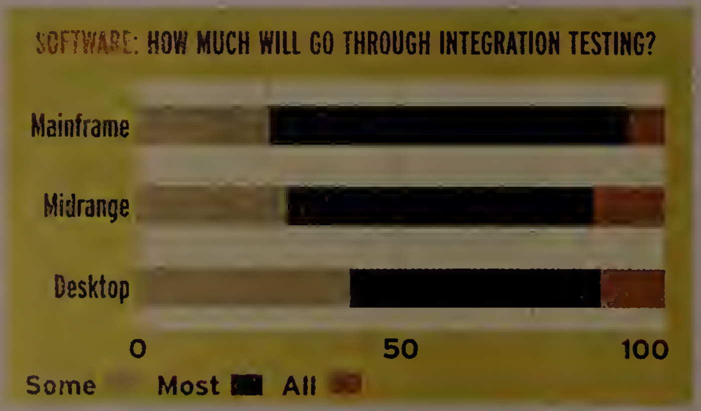
But Buck notes that the reports have already had an effect. "It's already caused a lot of activity," he says. "When a CEO gets a report card that tells him five of his sites have been doing fine and five have not, you can bet those five are now busily doing what they were supposed to be doing before."

— Kathleen Melymuka

## Going all out on testing?

Few companies plan to put all of their software through integration testing, according to a study by the Information Management Forum in Atlanta.

Integration testing is the most comprehensive of three stages of year 2000 testing. It runs all the integrated systems involved in a business process using post-year-2000 dates and data.



Source: Information Management Forum survey of 41 IT professionals at its year 2000 group meeting in March

## Start the millennium healthy — or else

The health care industry is woefully behind most other industries in year 2000 progress, according to a recent survey by Gartner Group, Inc. in Stamford, Conn.

With less than two years to go before Jan. 1, 2000, about seven of every eight health care organizations are just getting started or becoming aware of the need to fix date-dependent code, Gartner Group says. The rest have either completed their inventory of code or launched their remediation program.

By contrast, about one-third of all industries have begun remediation, while about 15% are beyond that point.

Gartner Group, which calls the year 2000 the top information technology issue in health care this year, made its industry comparisons using its Compare Scale, which gauges year 2000 compliance.

**@ COMPUTERWORLD**

**For more on the year 2000 problem, go to our Web site (*www.computerworld.com*) and click on "Year 2000" under "Features."**

## Is a recession coming?

Will the year 2000 cause a global recession? Economist Edward Yardeni at Deutsche Morgan Grenfell in New York says it's likely.

Yardeni last month raised the odds of a "severe global recession" from 40% to 60%. On his Web site (*www.yardeni.com*), Yardeni calls the year 2000 problem "a very serious threat" to the U.S. economy that's also bound to disrupt the entire global economy.

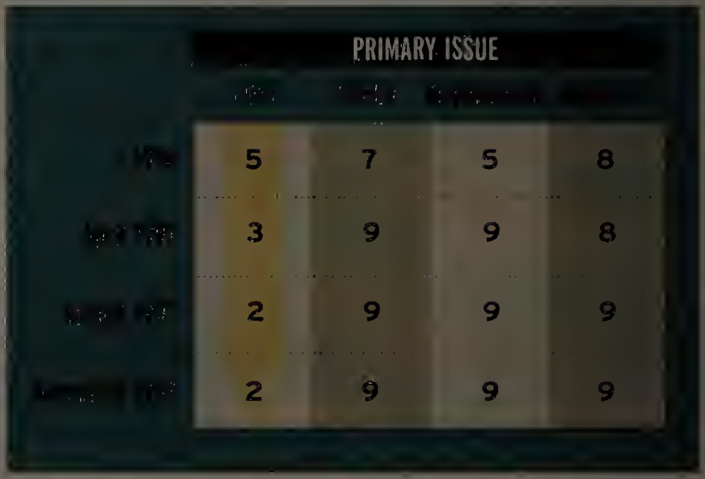
Such a recession, Yardeni adds, could last at least 12 months "and could be as severe as the 1973-74 global recession" caused by the OPEC oil crisis.

"Just as oil is a vital resource for our global economy, so is information," he writes. "If the supply of information is disrupted, many economic activities will be impaired, if not entirely halted."

## Damn the cost! Full speed ahead!

In four separate surveys over the course of one year, Howard A. Rubin, president of Howard Rubin Associates in Pound Ridge, N.Y., and chairman of the department of computer sciences at Hunter College in New York, found that of four major factors in fixing the year 2000 problem, only cost became less important over time.

Rubin asked information systems managers and directors to rate the following statements on a scale of 1 (strongly disagree) to 10 (strongly agree):



| | PRIMARY ISSUE | | | |
|---|---|---|---|---|
| | [illegible] | [illegible] | [illegible] | [illegible] |
| [illegible] | 5 | 7 | 5 | 8 |
| [illegible] | 3 | 9 | 9 | 8 |
| [illegible] | 2 | 9 | 9 | 9 |
| [illegible] | 2 | 9 | 9 | 9 |

## Will they keep the lawyers away?

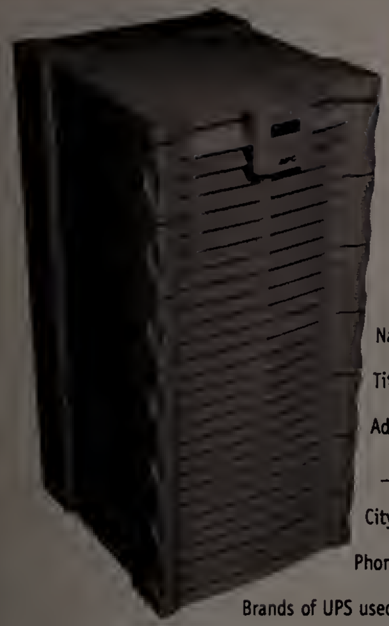
Companies could be exposing themselves to danger by not having their year 2000 compliance tested, audited or verified by an outside firm.

That's the message from Cutter Consortium, an information technology consultancy in Arlington, Mass. In a survey released in February, nearly 82% of IT professionals said their companies hadn't had their year 2000 compliance checked by outside auditors.

The high percentage was a surprise to Ed Yourdon, chairman of Cutter. "What are they waiting for? With each passing month, the stakes just get higher," he says.

Cutter also says just over half (50.3%) of the respondents said their companies hadn't informed their financial auditors about their potential year 2000 costs and liabilities. Of that group, nearly 11% said their companies plan to do so in the first half of this year. But 18% said their companies never plan to do so.

"This could be a fatal mistake for some organizations," Yourdon says. "The potential [for] lawsuits tied to year 2000 issues is already staggering, but by actively choosing not to warn your financial auditors of possible problems, you could be choosing to put yourself out of business after the millennium."



# FREE! Symmetra Video

☐ **YES!** I'd like more information about Symmetra™ Power Array™. Please send me a FREE kit.

☐ **NO,** I am not interested in Symmetra at this time. But I would like a FREE Power Protection Handbook.

Name: ______
Title: ______ Company: ______
Address: ______
______
City: ______ State: ______ Zip: ______ Ctry: ______
Phone: ______ Fax: ______
Brands of UPS used: ______ #: ______
Brand of PCs used: ______ #: ______
Brands of Servers used: ______ #: ______

* Allow 6 - 8 weeks for delivery.
*Please fill in all information completely for prompt service.*

APC
AMERICAN POWER CONVERSION
FRANCE 98 WORLD CUP
OFFICIAL POWER PROTECTION SOLUTIONS

**http://promo.apcc.com** KEY CODE C894Z
**(888) 289-APCC x1100 • FAX: (401) 788-2797**

©1998 APC. All Trademarks are the property of their owners. SY1A8EB-US • E-mail: datacenter@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

CW 040698

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST-CLASS MAIL PERMIT NO. 36 WEST KINGSTON, RI

POSTAGE WILL BE PAID BY ADDRESSEE

APC
AMERICAN POWER CONVERSION
DEPT. C894Z
132 FAIRGROUNDS ROAD
PO BOX 278
WEST KINGSTON RI 02892-9920

In 2 minutes you can add capacity for 20 new servers, 2 hours of runtime, or twice the fault-tolerance...

**Introducing New Symmetra™ Power Array™ from APC.**

Protect ME! APC

If you've ever installed a 6-20kVA, non-redundant, legacy UPS system in a datacenter, you know the challenges: installation is a struggle, maintenance is a challenge, power upgrades are unheard of, and hardware tends to be unreliable. In fact, most legacy UPSs were designed for electrical and manufacturing applications and not with the needs of today's sensitive datacenters in mind. Worst of all, with a single point of failure, the legacy system is all too interruptible.

With power problems causing nearly half of all network downtime, the fastest and easiest way to increase network availability is to increase power availability. Now, APC's Symmetra™ Power Array™, a revolutionary power protection system, provides the high availability, flexibility, reliability, ease of installation and simple upkeep you need – all without breaking your back or the bank. Best of all, Power Array redundancy and manageability deliver uninterruptible peace of mind.

**N+1 Redundancy:** Symmetra Power Modules share the attached load evenly. If one module is removed or fails, the other modules seamlessly and instantaneously pick up the rest of the load. N+1 redundancy is used today in disk arrays (RAID), in processor power supplies, and in processors themselves. Symmetra Power Array brings redundancy to server power protection for the first time.

**Scalable Power:** Symmetra Power Array can be configured for 4-16kVA, enough for mid-sized computer rooms. Incremental 4kVA Power Modules expand UPS voltage load capacity to match datacenter demands.

**Scalable Runtime:** Additional Battery Modules, which may be shifted from one Power Array to another, or added in Extended-run Battery Frames, can provide virtually unlimited runtime. If you need to solve the problem of network downtime once and for all, install a Power Array with redundancy and fault-tolerance to match your server and storage. Call APC today for your FREE Enterprise Solutions Kit.

**Installing or reconfiguring your modular Power Array couldn't be any simpler.**

**Add Redundancy and Fault-tolerance**
*True N+1 Redundancy ensures maximum uptime and high systems availability. In a Power Array, battery, power and intelligence modules are all redundant, providing total power reliability for your network.*

**Add Capacity/Runtime**
*Protect your investment with redundant, modular power modules: Scalable kVA and runtime ensure that Symmetra will meet your power needs now and in the future.*

**Simplify Maintenance**
*Symmetra's service-friendly design cuts the cost and complexity of maintenance. Batteries, intelligence modules and power modules are user-replaceable and hot-swappable.*

**Integrate Advanced Management**
*Symmetra power array provides the ability to manage your network or datacenter power from anywhere in the world with PowerChute® plus management software. Whether you use a Web-based or LAN/SNMP-based management platform, APC software and accessories integrate with your existing management solution.*

Designed for Microsoft® BackOffice®

Notes

**FREE! Symmetra Video**

*an invaluable set of tools to help plan your datacenter power protection, including the Gartner Group report, "Uninterrupted Power Supply Systems in a Distributed Computing Environment". Just go to*

**http://promo.apcc.com** KEY CODE C894Z

*or E-mail datacenter@apcc.com and get your FREE kit today!*

APC
AMERICAN POWER CONVERSION
FRANCE 98
WORLD CUP
OFFICIAL POWER PROTECTION SOLUTIONS

**(888) 289-APCC x1100• FAX: (401) 788-2797**

©1998 APC. All Trademarks are the property of their owners. SY1A8EF-US • (800)347-FAXX PowerFax • E-mail: datacenter@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

*APC has won more awards for reliability than all other UPS vendors combined.*

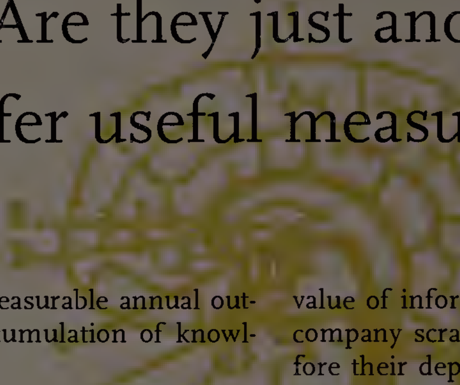
WIN 100 WINDOWS MAGAZINE 1997

EDITOR'S CHOICE

# TAKING THE MEASURE OF KNOWLEDGE ASSETS

**PAUL A. STRASSMANN**

Knowledge management and intellectual capital are the buzzwords that have launched a thousand books, articles and conferences. Are they just another passing fad, or do they offer useful measures of performance?



That's hard to tell. As yet, nobody practicing knowledge management has succeeded in measuring whether their knowledge assets have increased or diminished. The measurement schemes out there are jumbles of facts, subjective evaluations and opinions. These schemes show only that knowledge management is evolving from magic to astrology and is still far from offering managers repeatable, unambiguous and useful metrics. To overcome that deficiency, I will show that knowledge assets are indeed quantifiable. Here's a way to measure knowledge based on hard numbers, not opinions.

## LINKING KNOWLEDGE ASSETS AND FINANCIAL MEASURES

The true measure of knowledge is in observing outputs.

The surest way to determine an organization's worth is to sell it. The price reflects whether the company's worth is greater than its reported financial assets. That happens during mergers, acquisitions, buyouts and whenever company stock is traded. The value of a company's knowledge can be explained as the difference between its reported financial assets and its actual market value, which is the share price multiplied by the number of shares.

Unfortunately, it's impractical to calculate the value of a company's knowledge that way. Stock prices fluctuate for reasons unrelated to anything employees may know. Hostile acquisition offers don't necessarily reflect the acquirer's esteem for the knowledge of the company's managers. Therefore, one must seek out valuation in ways that reflect the economic values the employees create.

## CALCULATING KNOWLEDGE CAPITAL

Knowledge Capital forms when employees think or talk about how they are delivering goods and services. That usually occurs when workers are engaged in overhead tasks, not when they're actually delivering goods or services.

If learning, training, talking, writing and communicating make for improved productivity, it will reveal itself as improved economic performance and will become measurable in dollars. That real money is the return on the newly created Knowledge Capital. It discloses the value of the knowledge that has been unleashed by informed actions.

What are the measurable annual outputs from the accumulation of knowledge?

I call that "information value-added"; economists call it net surplus economic value. It's what's left after you pay suppliers, the government, employees, creditors and shareholders and after you replace obsolete assets. But information value-added isn't the same as Knowledge Capital. Knowledge Capital is that intangible source that makes it possible to generate annual profits. To state it another way: If Knowledge Capital is the principal, then information value-added is its annual yield. If you know what the investors' minimum expected rate of return is, it's easy to calculate the worth of the asset from which it originates.

That approach makes Knowledge Capital a calculable number.

Take, for example, the valuation of the Knowledge Capital for Microsoft. At the end of 1996, its financial capital was $7 billion. After subtracting from its 1996 profits of $2.2 billion the interest payments for the capital, which was $210 million, we are left with Microsoft's information value-added of $2 billion. To generate such an amount implies, using Microsoft's low cost of equity capital, the presence of an intangible principal of $67 billion ($2 billion divided by .03, the fraction of financial capital used to pay interest), which is then Microsoft's Knowledge Capital.

It just happens that the stock market valuation of Microsoft at the end of 1996 was $98.6 billion. In other words, exuberant investors attributed to Microsoft a Knowledge Capital valuation of $91.6 billion ($98.6 billion minus $7 billion in financial assets). Any way you look at it, Microsoft's Knowledge Capital lies somewhere between $67 billion and $91.6 billion.

A comparable analysis of 359 U.S. industrial companies shows Knowledge Capital worth $1.7 trillion, or 217% of their net financial assets. Clearly, knowledge is more important than what the accountants record as tangible assets.

## PUTTING THE MEASURES TO WORK

The gain in the worth of a company's Knowledge Capital is arguably the most important indicator of its success in the Information Age. It should be instrumental in changing the attitudes of accounting-minded executives about the value of information. For example, if a company scraps 100 forklift trucks before their depreciation is written off, it would be recorded as a loss for accounting purposes. But if 1,000 employees with career-life learning costs of at least $150 million leave a corporation, none of the financial reports would reflect that as a loss. And the stock market may actually recognize it as a gain. Many of the faults with today's information management practices can be traced to such bias, which favors accounting over knowledge-generating assets.

One can view Knowledge Capital as the consequence of a stream of expenses that makes a company more effective. Meetings may contribute to greater employee awareness. Training is useful if put to good use. Software need not be an expense if it's reused. Everything that contributes to an accumulation of knowledge can become a capital investment with sound information management practices.

Every manager should, therefore, monitor which portion of his overhead expense is temporary and how much of it builds capital. Such monitoring is possible by tracking a firm's overhead-to-Knowledge Capital conversion efficiency. For example, the 10-year sum of all overhead expenses for a prominent pharmaceutical company adds up to $18.9 billion. For that period, I calculated its Knowledge Capital growth as $8.6 billion. With a conversion efficiency of 45.5%, that firm belongs to the U.S. elite, and I can prove that by numbers, not by opinion surveys. (Microsoft's overhead-to-Knowledge Capital conversion efficiency is a spectacular 451%.)

## IMPLICATIONS FOR CIOS

By recognizing that Knowledge Capital is a measurable quantity, the executives in charge of information management should be able to shift from their preoccupation with short-run expense efficiency to a new perspective: how to create valuable knowledge assets. The right set of measures will help in explaining and justifying how to accomplish that objective. ☐

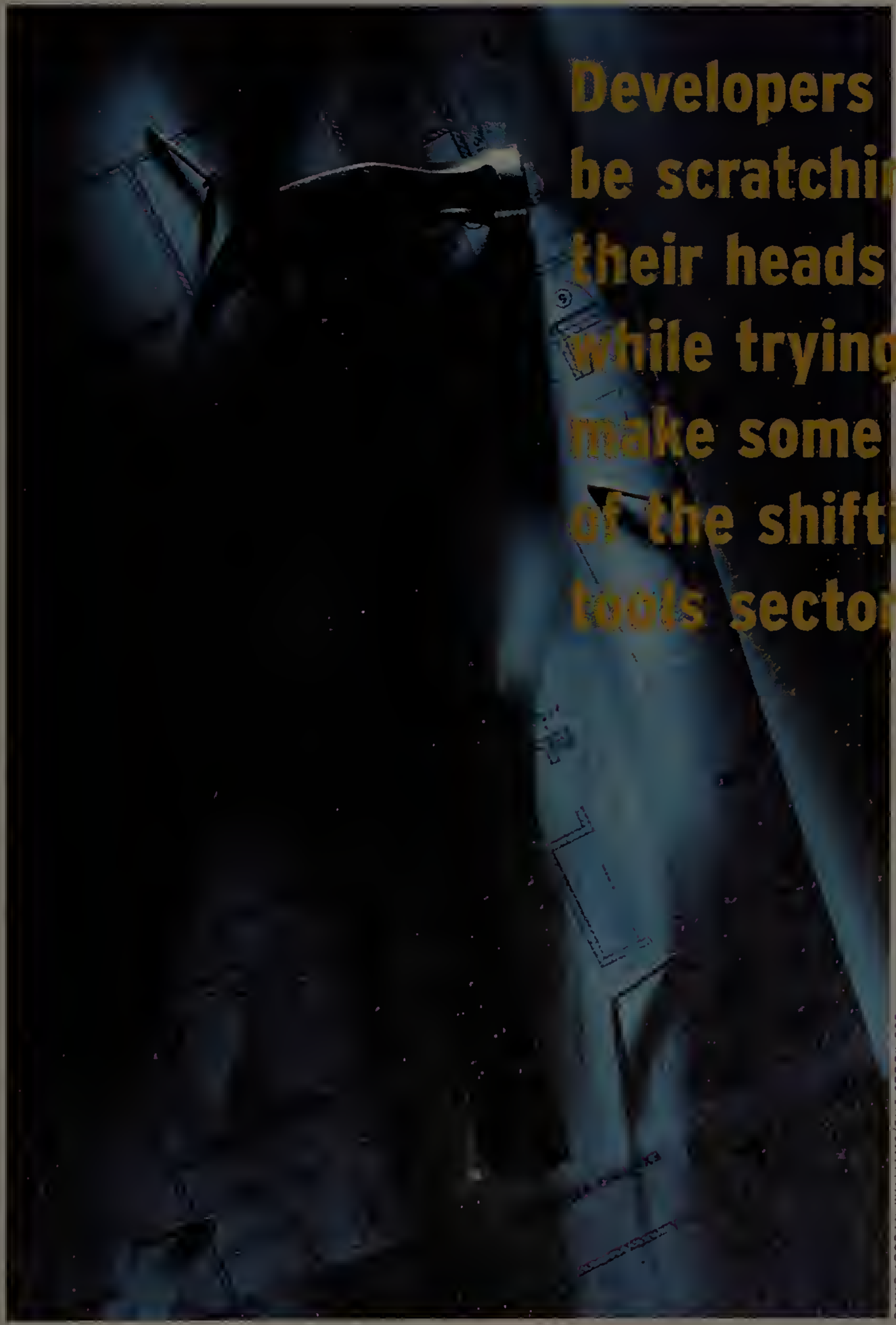
---

*Strassmann (www.strassmann.com) holds the registered trademark for Knowledge Capital from the U.S. Patent and Trademark Office. He can be contacted at paul@strassmann.com.*

## Review Center

### *Application development tools*

# Does anyone really have a Plan?



**Developers may be scratching their heads for a while trying to make some sense of the shifting tools sector**

DAVID JORDAN WILLIAMS/THE STOCK REP

So, are your application development efforts moving in 17 directions, or are they going nowhere at all? Either way, you're not alone.

Quite simply, app dev is in a muddle right now. Corporations are wrestling with Java; the integration of legacy applications with the Web; build vs. buy questions; CORBA vs. DCOM; nonprogrammers building applications, and so on. Oh, and don't forget the year 2000.

If you are hesitant to move forward with an app dev strategy today, you may be in good company. Analysts say user reluctance may be a natural thing.

"People may be in a fog for the next two or two-and-a-half years," says Liz Barnett, an analyst at Giga Information Group in Westport, Conn. Barnett says year 2000 projects are draining development resources in information technology groups, and developers are overwhelmed by technology and questions such as whether to build, buy, or buy and customize.

> **'People may be in a og for the next two or wo and a half years."**
> **- Liz Barnett, analyst, Giga Information Group**

Besides all of that, the structure of the development team has been redone. "If there is any trend at all, it's an increasing ability for lines of business or operational groups to create their own applications," says Eric Brown, an analyst at Forrester Research, Inc. in Cambridge, Mass. "They can use relatively simple tools. It's about assembling components, and they don't have to run around [installing] it on people's desktops. They do it with HTML."

Brown agrees that development managers may be stuck in a holding pattern for a while, partly because he doesn't expect most companies to switch development tools during the ongoing skills crunch. Taking developers off a job to train them in a new environment just may not be worth what you might gain from the new tool.

Also, he says most companies won't rush to Java until it becomes more stable, and it will be another year or two before most companies lock in either Common Object Request Broker Architecture (CORBA) or Distributed Component Object Model (DCOM) as their primary distributed component platform.

Where will there be movement? Watch for Microsoft Corp. to extend its dominance in the tools sector. In the pages that follow, we look at how several organizations chose their development tools — and Microsoft has played a key role in each.

Riding the strengths of its Visual Basic, Visual C++ and its integration message, Microsoft has posted impressive market numbers. For example, Computerworld Information Management Group surveyed 2,410 sites last year, and 40.3% listed Microsoft as their primary vendor for client/server development tools, up from less than 28% two years ago. Compare that with the next closest vendors, Sybase, Inc.'s Powersoft and Oracle Corp., which have been around the 11% to 12% level.

"Microsoft's numbers are daunting, but it's certainly not over," Barnett notes. She expects plenty of smaller, specialized vendors to remain good alternatives to Microsoft. She also sees several new players emerging — particularly in World Wide Web development area and companies such as SilverStream Software, Inc. and Progress Software Corp.'s Aptivity group. Reviewer Howard Millman takes an IT manager's view of that market later in this section (page 80).

Then there is what Brown calls the need to "serverize" applications — retooling client-based applications built with products such as Visual Basic and Powersoft's PowerBuilder to run primarily on the server — and team development, when users meet with programmers and programmers learn to share with other programmers.

We looked at two representative products aimed at the team concept and assessed how well they work in the real world (page 79). The bottom line: App dev is no longer just a synonym for programming, and you can expect tools to be as varied as users' needs. — *James M. Connolly*

# Tales from the field

*By Sharon Gaudin*

Developers are building applications to run across the entire system. And they can't do that with only one language or one tool.

They need rapid application development tools to build database front ends, C++ to build complex computing and analysis programs and Java to send information across the network.

That means information systems managers have to keep track of a plethora of languages, tools and vendors, along with workers' skill levels and training needs. Management can be as complicated as the programs themselves.

*Computerworld* examined the tool selection process at three organizations and found that the deciding factors are as different as the organizations: a desire to move to Java; the seamless integration of Microsoft's various tools; and the need to address the personal preferences of individual developers.

## Java bound

**Econometrics, Inc.**
Chicago

**CHALLENGE:** Put its database query business online

**SOLUTION:** Base most new projects on Java and switch many of its C++ applications to Java

**TOOLS:** Microsoft's Visual Basic 5.0 Enterprise Edition, IBM's VisualAge for C++, Sun's Java Development Kit

Developers at Econometrics are hinging much of their hopes and their work on what many in the industry consider too immature to count on.

The market research firm, which helps companies such as Daimler-Benz and First Union Corp. tap in to potential markets by analyzing its database of 180 million consumers, is typical of most companies that develop their own applications. Econometrics' developers use several different application development languages and tools to get their work done.

What makes Econometrics stand out from the crowd is that developers there are focusing an increasing percentage of their work on the Java language. While most companies are either doing limited work with the still relatively young language or are just testing the Java waters, Econometrics is basing most of its new projects on Java, as well as switching over many of its C++ applications to Java.

"Our business is about connecting our customers to our database," says Brian McGuire, director of interactive technologies at Econometrics, which has eight developers. "We need to work with these people over the Internet any time of the day, anywhere they are. For online work, Java is the obvious choice because I need to know our customers can get to our information no matter what machine or browser they're using."

McGuire's developers use Microsoft Corp.'s Visual Basic 5.0 Enterprise Edition to

**Java bound,** page 78

"Our business is about connecting our customers to our database"
– Brian McGuire

## Microsoft-centric

**Computer Literacy Bookshops and Online, Inc.**
Sunnyvale, Calif.

**CHALLENGE:** Keep pace with sales growth rates of up to 20% per month

**SOLUTION:** Automate more functions by building new applications

**TOOLS:** Microsoft's Visual Basic, Visual C++ and SQL

When your business is growing at an average rate of 20% per month, your developers had better make sure your information systems can keep up with the influx of customers.

That's the focus of Kim Orumchian, vice president of engineering at Computer Literacy Bookshops and Online. And with good reason. The online retailer of computer and technical books is an electronic-commerce success story. Only 2 1/2 years old, the World Wide Web site (*www.clbooks.com*) clocks anywhere from 100,000 to 200,000 hits per day and brought in $20 million in revenue last year. And that's with selling only technical books. Not one of their sales ever made it into Oprah's Book Club, which is boosting other online booksellers such as Amazon.com and Barnes and Noble Online.

"When most people think of a Web site, only about 30% of the effort goes to the pages themselves. The other 60% to 70% goes to what's behind the Web site," Orumchian says. "We have to generate a packing slip and a shipping label. We take stock out of our inventory system. The actual pages people see are just the covering to what we have to get done."

Orumchian knows the quickest way to lose customers is to have a slow site or ordering and shipping problems. And scaling to meet the ever-increasing demand could magnify even the smallest problem.

"When your only contact with your customers is through your technology, it better as hell work," says Evan Quinn, an analyst at International Data Corp. in Framingham, Mass. "And when you add in that kind of growth, you've got some big issues there. You better be on top of it."

That means Orumchian's developers are working hard to stay ahead of the onset of technical growing pains that they fear could be racing up behind them. To do that, they are focusing their efforts on three development languages and one vendor company: Microsoft.

**Microsoft-centric,** page 78

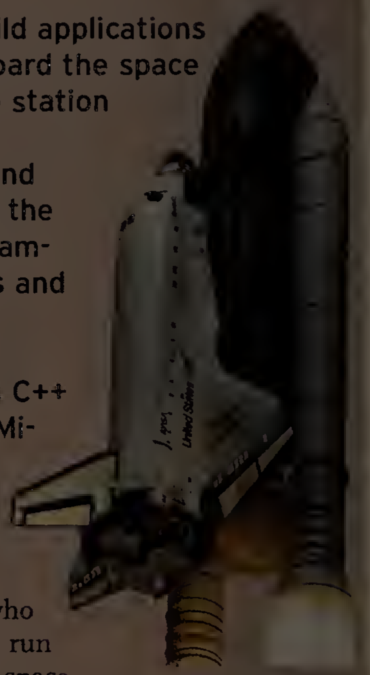
## Mission-critical mish-mash

**NASA**
Houston

**CHALLENGE:** Build applications to run on PCs aboard the space shuttle and space station

**SOLUTION:** Mix and match tools to fit the project and programmers' preferences and experiences

**TOOLS:** Borland's C++ and C++ Builder, Microsoft's Visual C++ and Visual J++



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA developers who build applications to run operations on the space shuttle and eventually on the space station take the phrase "mission critical" seriously.

Application glitches 200 miles above the Earth and away from the nearest information technology manager could mean disaster.

That means the languages and tools that developers use must perform and they must perform well together. It also means programmers need a variety of tools to tackle a wildly differing range of projects.

"We're all pretty much code junkies, and we'll use anything we can get our hands on that works for us," says Brian Coryell, a contract software engineer on The Spock Team at NASA's Missions Operations Directorate. "We have preferences but not prejudices. We just need to get this stuff up and make sure it's going to work. We'll use whatever does that for us."

Coryell and the other nine members of his team are building applications that will run on PCs aboard the space shuttle and space station, which is scheduled to start being rocketed into space this summer.

They are working on everything from computerized alarms that can be set as helpful reminders, to real-time global maps that indicate target sites and the nearest landing field, and programs that calculate the amount of oxygen left in case of an emergency.

To get that range of work done, Coryell says de-

**Mission-critical,** page 78

# THE MOST COMPREHENSIVE Y2K APPROACH ANYWHERE.

# NOW AVAILABLE BY THE SLICE.

**CONVERSION2000™**, our industry-recognized, proven, enterprise-wide process helps you address the multiple dimensions of Year 2000 compliance.

**TEST2000™**, an end-to-end testing process that includes testing readiness assessments, test office management, test planning, test execution and redeployment of services.

**CAMPUS2000™** brings together a consortium of leading information technology companies to provide resources for immediate conversion, testing and redeployment of Year 2000-affected computer code.

**AUDIT2000™**, an enterprise-level evaluation of an organization's existing Year 2000 status with emphasis on IT risk but including supply chain, customer and business infrastructure assessments.

## World class solutions to real world problems.

Major companies worldwide rely on Millennia III to provide a pragmatic approach to their Year 2000 challenges. And no wonder. Only Millennia III combines proven methodologies and resources to deliver true, totally integrated, Y2K answers.

But what if you are one of the lucky ones that only needs part of the answer?

As long as we're talking real-world, let's face facts. You simply might not have time to analyze, convert and thoroughly test all your systems between now and 2000. So it's good to know we can also deliver specific solutions such as testing, project auditing and distributed systems assessment/remediation. And we can do it even if you've already started on your Y2K project.

Which means with Millennia III, you get the whole or the exact slice necessary to address your most pressing Y2K priorities. For solutions made to order, contact us today. We deliver.

Call us today:
U.S. – **1-203-221-1121**
U.K. – **+44(0)1932 339 100**
Or visit our website at:
**www.millennia3.com**

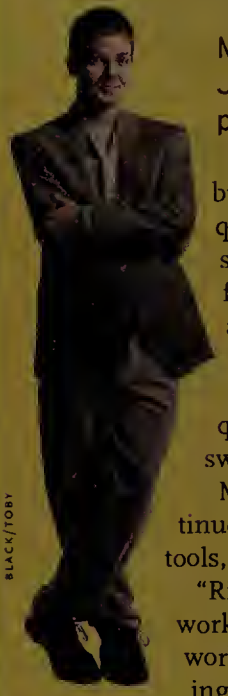
MILLENNIA III
THE FUTURE SECURED

# Tales from the field

## Java bound

### Econometrics, Inc.
Chicago

CONTINUED FROM PAGE 76



BLACK/TOBY

McGuire is willing to accept Java's cross-platform complications

build internal applications that query databases, append consumer lists and load database information onto CD-ROM. They also use IBM's VisualAge for C++ to build query managers, which handle information requests and then shoot the answers back to the client.

McGuire says he expects to continue using those languages and tools, but to different degrees.

"Right now it seems like half the work we do is turning into Java work," he says. "We're even rewriting a lot of our stuff in Java. We need to be on different platforms. That can't be a bottleneck for us."

McGuire noted that 90% of his C++ management applications already have been rewritten in Java. Although he has tried most of the major Java tools on the market, McGuire says he doesn't generally use a Java-based integrated development environment but instead works directly with Sun Microsystems, Inc.'s Java Development Kit.

Karen Boucher, vice president of the The Standish Group International, Inc., an analyst company in Dennis, Mass., points out that Econometrics is making a big commitment to a language that most companies aren't yet using on a large scale.

"Going 100% [Visual Basic] or 100% C++ isn't unusual. It is unusual for a company to go 100% Java," Boucher says. "Java is still getting its kinks worked out. There's still a question of performance. And there's the question of which Java will win. Will it be Sun's Java? Will it be Microsoft's Java? Will there be two Javas?"

Bill Gentry, vice president and general manager of Market OnLine at Econometrics, says he's not afraid of being ahead of the technical curve if it means making his new online database querying service, Market OnLine, accessible to all the new clients he'd like to pull in.

"We can't restrict anyone from using our service because of technical issues," Gentry says. "It's an issue of marketing efficiency. If I know that some percentage of my audience can't use us, then we're wasting communication dollars. No one will ever come in to Market OnLine and say they can't use it because of technical issues."

And McGuire says to get that kind of business value, he's prepared to deal with Java's growing pains, including how it's slower than industry powerhouse C++ and some nagging cross-platform compatibility issues. "I'm willing to accept any of the cross-platform complications Java has had," he says. "Oh yeah, it's worth it."

## Microsoft-centric

### Computer Literacy Bookshops and Online, Inc.
Sunnyvale, Calif.

CONTINUED FROM PAGE 76

Orumchian's developers are building their applications and Web site almost exclusively with Visual Basic, Visual C++ and SQL.

And he doesn't go tool shopping any further than Microsoft.

"It all mixes together," he says. "That's why we got into being basically a Microsoft shop, because early on we tried to integrate all different kinds of technologies, but we spent so much time trying to make them work together that it was really frustrating."

But Karen Boucher, vice president of The Standish Group International, says a company could replace frustration with fear if it gets trapped with one vendor.

"Making that 100% commitment is always pretty scary," she says. "It's what your mother says about all your eggs in one basket. It just doesn't always make sense."

But Orumchian says it does make sense for his company because he has three tools that he's sure work together.

And they have to work together to build a range of software from Web pages and inventory trackers to database querying applications. The new applications are the only way the company can deal with its growth. Computer Literacy's developers use Visual Basic to build back-end order processing applications and customer-oriented database front ends.

"Most of these applications involve a lot of database work, and [Visual Basic] makes it easy," Orumchian says.

"[Visual Basic] is quick, and there's a lot of connectivity options to databases, so there are a lot of choices in how you do things. And it gives us the ability to change things easily without ripping the code apart," he says.

Developers here also use Visual C++ to build complex database front ends because the development language gives programmers down-to-the-metal control over their code and functions, such as memory management.

They use SQL to build database connections and to create applications that will dynamically build Web pages in Hypertext Markup Language. "I prefer a diverse set of tools," says Gary Schultz, a senior engineer at Computer Literacy. "It gives you more problem-solving options.

"A lot of times it's hard to write something in one language and it might be better to go at it with a different language or different tool."

JAMES DAWSON, NYT

Orumchian says a slow site hurts business

## Mission-critical mish-mash

### NASA
Houston

CONTINUED FROM PAGE 76

velopers in his team generally stick with C, C++, Visual Basic and a small amount of Java. And they mix and match application development tools to fit the project and the programmer. He says they use Borland International, Inc.'s C++ and C++ Builder and Microsoft's Visual C++.

But Microsoft wins out when it comes to Visual Basic and Java because team developers use its Visual Basic tool and Visual J++, which are Microsoft's most popular tools.

"A lot of decisions over which tool and which language to use are based on who volunteers for the job and what their skills are," Coryell says. He says people working on the same project usually use the same language and tool.

Application glitches 200 miles above Earth could mean disaster

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

"Most of the developers here do not know how to use all of the tools," he says. "Computer programming has gotten to the point where you can't learn everything. You'd spend all your time learning and not writing code."

Evan Quinn, an analyst at International Data Corp. in Framingham, Mass., says it's a good idea to diversify on the types of languages and tools a company uses. But it's also good for developers to know more than one language.

"If you need someone to step in and take over, you don't want to have to worry about what they can do or can't do," Quinn says. "And that's not to mention the fact that knowing multiple languages greatly increases a developer's personal marketability."

Frank Wood, another software engineer on Coryell's team, says having different members specialize in different tools has so far worked out just fine.

"As long as we're all working together, it's fine," Wood says. The developers are trying out Java and Visual J++ for an upcoming browser-based environment that they want to install on both the shuttle and space station, he says.

He explains that the online applications would show the crew vehicle information, such as direction, speed and fuel level. "We're moving to have a Web server on the shuttle and an onboard intranet," he says. "We're using HTML but trying some Java. We possibly could get Java up there this year but probably by next year." ☐

---

*Gaudin is a* Computerworld *senior editor, application development, middleware.*

# You gotta have teamwork

Eight users of two different types of team development/configuration management tools report: The products have some challenges but are essential to a smooth development process

**StarBase's StarTeam encourages collaboration**

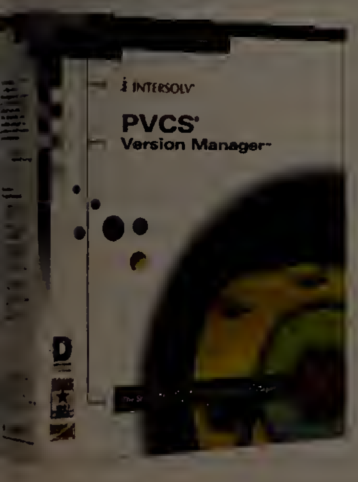
By Kevin Burden

Growing interest in team development adds a new clump of challenges to application development. The risk of team members stepping on one another's toes increases with the number of developers sharing files.

Enter software configuration management tools.

Configuration management, which also is called change management, is a catch-all name for tools that address the challenges of team development. Those challenges include knowing which files are being worked on and by whom; needing to roll back to previous file versions; tracking bug histories; and communicating with other team members.

Many development environments come with embedded tools to handle some of those tasks. But the problems with embedded tools become apparent when teams using multiple development environments work on the same project, says Al Smith, a senior systems analyst at T. Rowe Price Investment Technologies, Inc. in Baltimore.



**Intersolv's PVCS presents a tough learning curve**

The tools don't always mesh, and there is no common view of the project's flow. More important, reliance on such tools may exclude key nonprogrammers — groups such as marketing, quality assurance and end users. That's where third-party programs such as Intersolv, Inc.'s PVCS and StarBase Corp.'s StarTeam are intended to add value. They take different approaches to configuration management but are singled out by analysts as examples of the products in the sector.

PVCS comprises several products that address different aspects of change management and are sold separately. StarTeam comes as a fully integrated suite under a single interface.

Both products are intended to adapt to your development process, which tells developers what files they can work on and when; neither is capable of setting one.

These tools "can pull you out of a bind and fix problems. But without a process, you'll be in binds most of the time," says Beth Ouellette, director of quality and enabling at The Prudential Insurance Company of America in Newark, N.J.

## USER VIEWS

*Computerworld* asked four PVCS users and four StarBase users to discuss the products' capabilities and potential.

### EASE OF USE

As more nondevelopers take integral roles in the development life cycle, ease of use becomes critical for tools. The makers of StarTeam know this, and it shows in its interface, users say. But Intersolv didn't give ease of use the same attention, according to its customers — even experienced developers say PVCS is tough to use. Some of that can be explained by the two vendors' different philosophies toward project management. Intersolv's PVCS relies more on centralized control to deal with problems; StarBase emphasizes team collaboration.

"I got more done in one day with StarTeam than I did in two weeks with other products we evaluated," says Todd Mancini, principal software architect at One Source Information Services, Inc. in Cambridge, Mass.

Mancini says StarTeam seamlessly integrates with his different development environments (Microsoft's Visual C++ and Visual Basic), but he prefers to use StarTeam's interface over those of his development tools.

"All I do in C++ now is code. Everything else — check in, check out, project management — I do in StarTeam's interface," he says.

Part of StarTeam's beauty is that all of its functions are integrated under one interface, compared with PVCS, whose products are separate.

That integration leads to functional advantages. For example, bugs found through the defect tracking program can be attached to the exact problem file, helping quality assurance teams know what bugs to test for. "I've not seen another product that can do that," says Mike Sly, technical manager at The Reynolds and Reynolds Co. in Dayton, Ohio.

PVCS users clearly don't share the same enthusiasm for its ease of use. "It has a horrible Windows interface," says Harsh Kalra, a senior programming analyst at T. Rowe Price. Kalra says PVCS works "fabulously" through the command line, but it could take weeks for contractors and new programmers to come up to speed.

"We looked at PVCS but noticed it leaned too much toward the techie type," says StarTeam user Capt. Keith Kocan, program manager at the Standard Systems Group in the U.S. Air Force in Montgomery, Ala. "The people that put together our user manuals need configuration management to coordinate all the documents, but they wouldn't be able to understand PVCS."

### COLLABORATION

StarTeam users communicate through threaded conversations. One team member starts a discussion by sending an E-mail message through StarTeam's interface. StarTeam then automatically draws a relationship between the thread and project and tracks the initial message and its responses in a topic tree.

Besides facilitating conversation, StarTeam documents those conversations in a central repository. "If someone has the same problem months later, they can look up the conversation and not have to go through the same steps again," Sly says.

PVCS doesn't provide a means to document conversations. But it does offer a product called Tracker, which organizes and manages project issues such as feature requests, defect reports and other changes in a database format.

Developers can see the issues surrounding a project, but PVCS doesn't provide a way for them to communicate.

None of the four PVCS users interviewed are using Tracker. ☐

---

*Burden is a* Computerworld *features writer.*

## The challenges of team development

Configuration management software aims to meet the challenges faced by team leaders and members alike

**Team leaders'** concerns:

- How can we capture all the project-related information?
- How do we manage widely dispersed teams?
- How do we track the progress of our development efforts?
- How can we tell when a problem has been resolved?
- How do we know when the project is ready for testing, quality assurance and production?

**Team members'** concerns:

- What changes are assigned to me?
- What are the priorities for making all these changes?
- How do I inform others I have finished a change?

# Shopping for Web tools

By Howard Millman

To the untrained eye, the task of selecting a World Wide Web development environment looks like an exercise in metrics. But it consists of more than comparing features, modules and cost.

Putting myself in a corporate developer's place, I set out to see if I could make a sound purchasing decision based primarily on information provided by the vendor spokesmen and marketing literature. Although I expected some difficulty, it came not from a lack of objective information (although I sometimes had to dig deep) but because four of the five products that analysts suggested I look at — from Bluestone Software, Inc., NetDynamics, Inc., SilverStream Software, Inc. and Progress Software Corp.'s Apptivity group — had more similarities than differences.

Oracle Corp.'s Web Developer Suite was the fifth product. It offers a total development and implementation package, modeling and development tools and Oracle's relational database, which starts at $8,000 and rises rapidly from there.

For all the consistency in features, pricing set by the other four vendors varies widely. Some vendors base their selling price on the number of user seats, others by the number of servers or by the number of transactions. Some sell a complete system, others sell individual modules. So as you contrast the benefits of vendors' packages, keep in mind that your purchase cost acutely depends on the kind of applications you build and how you deploy them.

Look at what these products offer today, but also look at what's on the drawing board.

Vendors tend to add features spontaneously, not always waiting for a major upgrade. For example, SilverStream now offers only an NT version but will soon release a version for Sun Microsystems, Inc.'s SPARC.

### BUYER'S STRATEGY

If you want a one-stop-shop, you might make Oracle that stop. Its comprehensive Web Developer Suite provides all the tools you need to model, create, deploy and manage a scalable Web-based transaction system. In addition to delivering what appears to be a solid, well-thought-out product, Oracle can eliminate the need to assemble and maintain products from several vendors and the associated headaches that coordination entails. Besides Web applications, Oracle's suite lets users build traditional LAN applications — just in case the winds of change blow back toward client/server.

### SOME ASSEMBLY REQUIRED

Unlike Oracle, the other four integrated development environments (IDE) are component-based, meaning you have to do some collecting and assembling. For example, they typically contain a Java-based IDE, an application server, JavaBeans/ActiveX components and Java Database Connectivity (JDBC) database drivers. Generally, they lack modeling, version control, configuration management tools and a database.

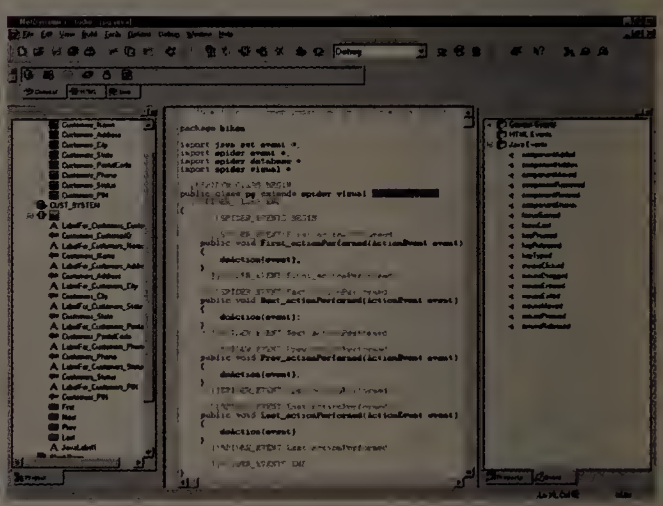
On the plus side, you gain the freedom to select the best add-on tools for the tasks you solved. Conversely, if you buy your components from different vendors, you have the responsibility to make them work together, which includes juggling multiple upgrades from several vendors.

A further complication arises when you try to find programmers who are familiar with the mix of add-on tools you select. During my investigation, I developed the following list of strategic shopping suggestions for those who intend to build transactional intranet/extranet applications:

▸**Do you want application partitioning to apportion the work between the client and the server?** A multitier architecture enables you to store your business rules on the server, making them easier to change and control. SilverStream can trigger server-side Java application logic based on server events such as receipt of E-mail, database changes and calendar events. That helps push information out based on changes on the server side.

▸**Do you want automatic load balancing to enhance system performance?** It will help to maintain peak throughput while minimizing alarms or the necessity of anyone babysitting the system during peak access periods. Likewise, high availability will ensure that your system can meet the challenges of peak load periods without excessive waiting. Bluestone, which announced Version 5.0 of its Sapphire/Web in March, claims an edge here. It says its Universal Business Server can scale to 2.5 billion interactions per day.

▸**Do you need to leverage existing legacy data sources, applications and links to external platforms?** Then look for development systems that provide access through native drivers, gateways or JDBC drivers. Typically, Open Database Connectivity drivers will exact a performance penalty. Sapphire/Web provides a comprehensive set of integration modules that provide access to SAP America, Inc.'s R/3, PeopleSoft Corp.'s Financials, IBM's CICS and other transactional systems. NetDynamic's Platform Adapter Component provides integration with third-party transaction systems and native connectivity and will interact with Cobol using metadata layers.



The NetDynamics Studio, a component of NetDynamics 4.0, lets users develop scalable, integrated and manageable network applications

▸**Do you require automatic fail-over and fault tolerance?** If you plan to build an enterprise class application, you will want this added level of protection. NetDynamics provides clones for fail-over protection as well as a multithreaded, multiserver architecture.

▸**Will you have distant users linked to the system?** Then evaluate your need for distributed debugging, which will allow you to test, monitor and debug client machines remotely.

▸**How thin do you want your client?** You may want to run with just a browser and accommodate remote users calling in on dial-up connections. SilverStream's deployment server makes extensive use of available runtime services to limit the size of application pieces that move across the network. Likewise, Apptivity can run on the thinnest of clients.

Other should-have features fall under that overworked category "ease of use."

You can quantify that objective, to some degree. For example, look at whether the system supplies wizards for database connectivity and form building. Does the product offer a drag-and-drop interface? Does it offer full support for JavaBeans, Common Object Request Broker Architecture, Enterprise JavaBeans, ActiveX and Component Object Model?

If you have control over the client-side browser used for access, those components will allow you to deliver mixed media, richer-looking screens that exceed even the eye appeal of client/server interfaces.

If you can't control the client's browser, as happens when you deploy applications on the Internet or an extranet, consider the value of Apptivity's Cross-Browser Deployment. ☐

*Millman operates Data System Service Group LLC, a Croton, N.Y., consultancy. He can be reached at (914) 271-6883 or hmillman@ibm.net.*

## The vendors

**SilverStream Software**
Burlington, Mass.
(781) 238-5400
*www.silverstream.com*

**Bluestone Software**
(609) 727-4600
Mt. Laurel, N.J.
*www.bluestone.com*

**NetDynamics**
Menlo Park, Calif.
(650) 462-7600
*www.netdynamics.com*

**Progress Software**
Bedford, Mass.
(781) 280-4000
*www.progress.com*

**Oracle**
Redwood Shores, Calif.
(800) 345-3267
*www.oracle.com*

# REBEL REBEL

First he was a political prisoner, then a notorious hacker. Now Yobie Benjamin is launching a security unit for Cambridge Technology Partners. Can he make it work?

BY DEBORAH RADCLIFF

It's a sticky day in Manila, 1976. A swell of protesting students lurches toward the Malacanang presidential palace, crying out against four years of martial law. But they never reach the palace. Ferdinand Marcos' military forces block the protesters' way with tear gas, batons and water cannons.

Thousands are apprehended and thrown into "detention." Many do not survive.

Yobie Benjamin does.

Twenty-two years later, Benjamin is technical director at Cambridge Technology Partners, Inc. (CTP), a Cambridge, Mass.-based systems integration and consulting firm that has $407 million in sales.

"I was arrested by six big guys, strapped to a dental chair and got my teeth broken off with the butt of a .45," Benjamin says as he leans back in a brocade conference chair in an airy office on the fringes of San Francisco's Multimedia Gulch.

In ensuing months, more torture followed. Solitary confinement. Stomach hosing. Ice blocks. Benjamin slipped into a two-month coma. For reasons he doesn't know, his life was spared. After seven months of detention, he was released to his family — who thought he was dead.

Benjamin says he survived because he had too much yet to do.

"I was a political dissident," he says. "Now I'm a cyberdissident."

**GROWING DEMAND**

Benjamin was a hacker for more than 20 years. Like all hackers, he believes in freedom of information, speech and technology. And true to the hacker creed, "knowledge is power," he voraciously analyzes the inner workings of technology and pieces together what he can.

Those abilities landed Benjamin, 38, his role as technical security guru and manager of CTP's new Enterprise Security Services unit, which is scheduled to be fully operational by the end of the year.

Analysts see a comfortable niche for that type of service; U.S. businesses lost $300 billion last year in intellectual property theft, according to the American Society of Industrial Security.

And 69% of 320 Fortune 1,000 organizations say

Rebel, page 82

JOHN HARDING

# REBEL REBEL

CONTINUED FROM PAGE 81

they were a target of information espionage last year, according to a report from WarRoom Research, Inc., an Annapolis, Md.-based firm. Of those victims, 52% experienced more than 31 successful, unauthorized intrusions into their networks, and 21% say their resulting losses exceeded $200,000.

"Security is a hot topic as the number and complexity of networks rise," says Jim Balderston, an analyst at Zona Research, Inc. in Redwood City, Calif.

CTP already blends many security services — evaluations, policy development and testing — into its primary business of application development. The company hopes the new unit will strengthen those offerings and add another element called penetration testing. For that, Benjamin is recruiting the best and brightest technical talent available.

> "Say I'm pissed at my boss and I want to flood his mailbox. All I have to do is go to the Web and download one of these [mail bombs]."
> –Yobie Benjamin
> Cambridge Technology

**HACKER TALENT, THAT IS**

Already, a steady stream of hackers is pouring into a half-empty wing on the bottom floor of CTP's casual, art deco-style San Francisco office.

"It's hard to explain what we're going to do here. I think it's better just to show you what corporations are up against, how easy it is for any hacker wanna-be to break in to someone else's system [and] what we're going to protect [companies] from," Benjamin says.

Seconds later, we're gathered around his 27-in. computer screen doing an Internet search for "mail bomb."

We find 141,791 matches.

Benjamin says, "Say I'm pissed at my boss and I want to flood his mailbox. All I have to do is go to the Web and download one of these." Sure enough, with a few points and clicks, we fill out a short template from the Haktek page. Feeling merciful, we send only 20 E-mail messages, 2K bytes in size apiece, to a guy down the hall.

Minutes later, we hear the guy down the hall cursing. It seems his Windows NT-based PC keeps shutting down and rebooting.

Next, Benjamin looks up port-scanning tools that can scour the open ports on World Wide Web servers, a specified domain name or range of IP addresses. Then he stops at another site with "nukers" such as WinNuke, which would flood those same ports and render them useless. We decide not to deploy them.

From there we visit a Web site full of downloadable viruses.

And so it goes.

That, Benjamin says, is what his new outfit is up against. "These tools are so easy to use, and there are so many of them out there," he says.

**NOT SO FAST**

According to Philip Cardin, a consultant at Renaissance Worldwide, Inc. in Lincoln, Mass., which has a division that will compete with CTP Enterprise Security Services, most security problems are the result of human error. Common glitches include poorly configured routers, version incompatibilities, open modems, holes punched in firewalls and insufficient reporting capabilities.

"Most hacks are not purely technical. For example, there's a lot of social engineering where the hacker calls up and tries to get a password," Cardin says. "A system needs to be secured from every conceivable approach."

Cardin says that by hiring so many hackers, CTP overemphasizes penetration testing at the expense of other areas of security.

At Renaissance Worldwide, "we don't get involved in trying to break in to systems because it's not a great value to customers," Cardin says. "It's much easier to perform risk assessments to determine where the most vulnerable machines are and then set up comprehensive monitoring on those machines."

**WHERE'S EI8HT?**

I'm in a rented Ford Taurus with a 28-year-old hacker named se7en (pronounced "seven") trying to learn more about Benjamin.

The Bay Bridge is lit up like a Christmas tree as we glide over the San Francisco Bay on a crisp February night. Se7en is waxing nostalgic about how his path crossed Benjamin's in cyberspace in the 1980s, before they actually met face-to-face two years ago. Back then, true hackers wrote their own code instead of copying tools from the 'net. The feds were on everyone's tail.

Benjamin, se7en says, has a knack for getting to know people and establishing trust — despite his background. From those relationships emerges a free exchange of information that helps feed Benjamin's appetite for knowledge.

Not many hackers possess Benjamin's people skills. Married with two children, he bucks the perception of the pasty-skinned misfit.

Benjamin, an expert coder, is a hacker in the purest sense.

On his daily train ride, Benjamin codes. Late at night, Benjamin codes. His wife has a degree in computer science from Stanford University. His 11-year-old daughter can already code simple C programs. And he says he's teaching his 9 month old "basic concepts of logic."

Two of the tools he developed in the past year to test clients' systems have given him claim to fame. Both are what he calls "Trojan horses," which simply means hidden code.

One Trojan horse, when embedded in Microsoft Corp.'s ActiveX controls, can slip into the NT operating system and reduce the security setting from "high" to "none," which amounts to opening the door to the NT kernel. The second Trojan horse allows hackers to download entire files of NT passwords from the NT registry.

After some "differences of opinion" over the ActiveX Trojan horse (Microsoft says it's no big deal; Benjamin says it is), Microsoft and Benjamin have reached a delicate truce. "We think that white-hat hackers play an important role by highlighting security issues," says Microsoft's Karan Khanna, Windows NT product manager.

**EARLY START**

True to the hacker profile, Benjamin developed his skills early. At 14, he learned Fortran by sneaking into the computer lab at the University of the Philippines, from which he later graduated with a degree in film and television. At that time, he set up a rudimentary bulletin board system and, as is typical of younger hackers, played Dungeons and Dragons with faceless friends around the world. "I was fascinated by the ability to communicate with large numbers of people," he says.

During the Marcos regime, those activities put Benjamin at great risk. Maybe that's why he seems unruffled about the risks and responsibilities inherent in setting up CTP's Enterprise Security Services unit.

He actually shudders when recounting his experiences in the Philippines. But he says they do not make him exceptional: "I was just one of 75,000 people unjustly detained during the Marcos' rule." □

---

*Radcliff is a freelance writer in northern California. She specializes in technical security. Her Internet address is derad@aol.com.*

## Hackers for hire

The growing popularity of penetration testing is a boon to hackers.

Hackers? As in street hackers? Aren't those guys untrustworthy, undisciplined, rebellious and hard to work with?

Chris Byrnes, vice president of systems management at Stamford, Conn.-based Meta Group, Inc., thinks so. But other consulting organizations, such as Ernst & Young LLP and Price Waterhouse LLP, have hired hackers and are pleased with their performance.

Gary Loveland, manager of enterprise security solutions at Price Waterhouse, says the hackers he hires are "ethical hackers."

"We do not even look at hiring independent hackers for our organization," he says.

The hackers Yobie Benjamin hires at CTP are top-notch "white-hat" hackers — those who test systems and report the problems to the manufacturers and victims. Many are reformed street hackers, now in their 30s. And they're good at what they do.

"A year and a half ago, I would have worried about hackers for hire. But many in the hacker community have grown up," says Michael Hunziker, business manager at CTP's Enterprise Security Services unit. "True, these people aren't the easiest to manage. But they have brilliant skills. And I'm very impressed with the passion they bring to the job."

Byrnes says management of a hacker-heavy department "will be touch and go." But, he adds, Benjamin is "smart enough to know the limitations."

— Deborah Radcliff

JOHN HARDING

THE HACK PACK. To staff CTP's new security unit, Yobie Benjamin is hiring a passel of "white-hat" hackers who are ready to trade their Jolt cola for a 401(k). Left to right: Nate Ramelia, Mike Schiffman, Benjamin, Erich Oehler and Bob Keys.

COMPUTERWORLD
Staffing woes deepen
Year 2000 glitches may be everywhere
WILL LDAP ZAP X.500?
BIG BLUE STAYS TRUE TO DB2
Digital suit shocks Intel
Data warehouse nightmare
Tivoli users desperately seek support
We need IT leaders, not more IS managers.

# IT'S NOT HOW MUCH YOU READ.

You can read a knee-high stack of computer magazines each month and still not find the depth and breadth of news and information you'll discover each week in the pages of *Computerworld.*

As the only weekly newspaper for IS professionals, *Computerworld* is filled with up-to-the-minute articles on topics ranging from products and people to trends and technology. We cover it all — PC's, workstations, mainframes, client/server computing, networking, communications, open systems, World Wide Web, intranets, and more.

It's everything you need to know to get an edge on the competition.

That's why over 152,000 IS professionals pay to subscribe to *Computerworld*. Shouldn't you?

# IT'S WHAT YOU READ.

Order *Computerworld* and you'll receive 51 information-packed issues. Plus, you'll receive our special bonus publication, *The Premier 100*, an annual profile of the leading companies using information systems technology.

Call us toll-free at **1-800-343-6474**, or visit us on the World Wide Web at http://www.computerworld.com. To order by mail, use the postage-paid subscription card bound into this issue. And get your own copy of *Computerworld.*

Then you can spend less time reading about the world of information systems. And more time conquering it.

**COMPUTERWORLD**
The Newsweekly for Information Technology Leaders

## Quarterly Hiring Outlook

**Recruiting costs doubling.**
**Training budgets tripling.**
**Salaries shooting through the roof.**
**Trying to find ANY skilled IT workers ain't . . .**

# NO day at the BEACH

Even the allure of Florida's coast can't help Brian Garavuso snag the IT skills he needs

MICHAEL PRICE

### BY MIRYAM WILLIAMSON

BRIAN GARAVUSO has run help-wanted ads in most of the major northern U.S. cities, including New York, Chicago, Boston and Minneapolis.

"We were targeting cold climates," says the vice president of information systems at South Seas Resorts, a regional hotel chain headquartered in Fort Myers, Fla. "We thought Florida would look good in the winter."

But that didn't work. So Garavuso shifted his advertising focus to Florida's largest cities. Still no luck.

In six weeks he has heard from 10 applicants, "but only one of them could even partially fill the position," Garavuso says. And that job candidate is considering offers from two other companies and a counteroffer from his current employer.

"I've got projects backing up and no one to get them done," Garavuso says. He says he had hoped to find someone to replace a departing Unix systems administrator, who also programs in C and Visual FoxPro. Now Garavuso is looking for two or even three people to replace one.

Such is the life of an information technology hiring manager these days.

"Across the board, technology professionals are in incredible demand," says Mark Biscoe, Northeast regional vice president at Renaissance Worldwide, Inc. in Newton, Mass., an IT consulting company and placement service.

Companies such as Biscoe's are riding high these days, providing temporary help when permanent workers can't be found. Biscoe attributes some of the scarcity of candidates to the coming millennium.

And it's no secret that more and more IT professionals have been bitten by the entrepreneurial bug. Many are taking themselves out of the full-time job market. They are instead seeking the higher pay and increased independence of contract consulting. Call it the Dilbert Syndrome.

"Many of these people love the technical aspects of the work but hate the office politics. They want to stay focused on what they do best," Biscoe says.

Rich Crutchfield, vice president and chief information officer at Equifax, Inc. in Atlanta, is trying to fill 60 hiring requisitions at that company. Equifax provides customer information to financial services, telecommunications and health care administration companies. But Crutchfield isn't feeling Garavuso's pain yet. "It's taking a lot of effort to fill those jobs, but it's not something I'd call a problem," he says.

But then, pain thresholds are relative. Garavuso's hoped-for three new hires represent almost 17% of South Seas Resorts' 18-member IT staff; in contrast, 60 openings at Equifax make up 3% of its staff of 1,900 IT employees.

#### WILL TAKE ANY SKILL

Name almost any IT skill, and there is a company looking for the people who possess it. Cobol, MVS and CICS experts — the dinosaurs of the early 1990s — are this year's hotshots. Many people who upgraded their skills to build client/server systems are back in the lucrative legacy mainframe trenches.

Crutchfield says he would like to find assembly language programmers and that anyone with object orientation, C and C++ programming languages and Internet/intranet development skills is hot these days. People who know Java or Microsoft Corp.'s Visual Basic need only raise their hands to find themselves snatched up by an eager employer, hiring experts say.

Gary J. Kerl, vice president of corporate information services at Blue Cross/Blue Shield of New York, has at least 12 job slots open. He is especially looking for people who know imaging and systems management functions such as quality assurance and security administration. Hardest to find are people with relational database and SQL programming skills, Kerl says.

LAN/WAN administrators are in demand everywhere. SAP AG and PeopleSoft, Inc. implementers are hard to find. Biscoe says revenue from PeopleSoft placements in the first two months of this year and projections for the rest of the year are astounding.

Of course all the pent-up demand is reflected in the paychecks.

"Legacy programmers that a couple of years ago were asking for $30 or $35 per hour are now looking for upwards of $50 per hour," Biscoe says. "I have folks earning $40,000 per year, and new applicants with similar skill levels are looking for $60,000," Garavuso says.

The intense demand also shows up in payroll budgets.

Crutchfield says he is paying new hires 20% more than he did last year. And Garavuso will be 15% over budget in the salary area. Next year's budget proposal will show "at least a 20% increase," he says.

Recruiting costs are up, too. Garavuso has spent 10 times as much in the past year on advertising for help as he did in the previous year. For the first time, Kerl is considering "measures such as paying signing bonuses to new hires and paying our existing employees finders' fees to get them to bring people in," he says.

**WON'T SETTLE FOR LESS**

Most managers say they won't lower their standards for staffers. They say they will hire temporary help until the real thing comes along. "We won't hire people out of desperation," Kerl says.

Crutchfield negotiates with recruiting firms so he can offer contractors permanent positions if they turn out to be the type of employee he's seeking. But he says the ratio of contract to permanent employees has increased over the past year. "Overall we have about 25% contractors now, and on some of our newer projects and year 2000 work, it's more like 50-50," Crutchfield says.

And although they insist they won't sacrifice quality to fill slots, managers are taking a new look at interns and inexperienced college graduates. Garavuso says he once "got burned operating on the warm body theory" and now won't hire anyone who isn't qualified. But "I'll hire for attitude and train for the aptitude," he says.

Because of the difficulty hiring for skills, Garavuso says he has tripled his training budget from last year to this year. Now he finds himself "between a rock and a hard place." He worries about taking on inexperienced help; his staff is already "running at 100 miles per hour" and doesn't have the time to train anyone.

Kerl hires graduates from local colleges for a six-month trial. "At the end of six months, these people either become permanent employees or, if they don't work out, a local employment agency will work with them," he says.

Biscoe describes a 10-week partnership program with Boston University that "trains people right out of college, or even re-entering the workforce, in straight Cobol and CICS work. It allows them to roll right into assignments with one of our customers." Renaissance has a senior staff member who provides technical support to those people. "We're creating paramedics that can go out and attack the work, with a doctor on call if they need one," he says.

No matter how tough the market, real estate professionals tell their clients there is a buyer for any house — if the price is right. The same is true in today's tight IT hiring market, managers say.

"We find the quality of people we need. It just takes longer, and we're paying more for them," Crutchfield says.

Kerl says money is only one factor. "It's not just a salary compensation issue any more, there is also the benefit package situation," he says. Blue Cross/Blue Shield has revamped its salary and benefits this year.

But nobody says it's going to be easy. Even the unworried Crutchfield acknowledges that it takes an average of 60 to 90 days to fill a slot. "It depends on the position, of course. It can go anywhere from a few weeks to eight or nine months." Still, he says, the projects that matter are getting done. "I'm not going to tell you that there aren't some lower-priority projects that are delayed, but for anything we consider important to the business we have so far been able to find the resources to get us to where we need to be," Crutchfield says. ☐

---

*Williamson is a freelance writer in Warwick, Mass.*

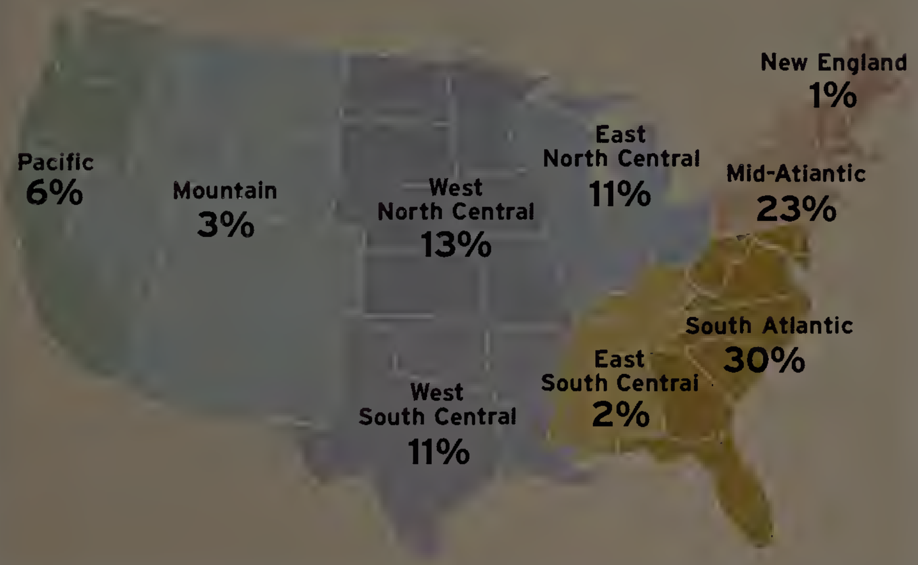
## THE HIRING BY THE NUMBERS

IT hiring managers say they plan to increase their IT staffs in the next quarter by the following amounts:

| REGION | PERMANENT STAFF HIRING | CONTRACTOR HIRING |
|---|---|---|
| East North Central | 3% | 0% |
| East South Central | 2% | 2% |
| Mid-Atlantic | 4% | 0% |
| Mountain | 3% | 6% |
| New England | 2% | 0% |
| Pacific | 3% | 0% |
| South Atlantic | 7% | 0% |
| West North Central | 3% | 18% |
| West South Central | 4% | 5% |

## THE REGIONAL HIRING VIEW

The expected total hiring of both permanent and temporary staff will be distributed regionally as follows:



## TOP INDUSTRIES FOR IT STAFF

The best job markets for PERMANENT IT PROFESSIONALS

| RANK | INDUSTRY | % OF TOTAL PROJECTED HIRES |
|---|---|---|
| 1. | Financial services and insurance | 28% |
| 2. | Health care | 25% |
| 3. | Communications | 11% |
| 4. | Government (federal, state and local) | 9% |
| 5. | Manufacturing (other than computers) | 4% |

## TOP INDUSTRIES FOR IT CONTRACTORS

The best job markets for TEMPORARY IT PROFESSIONALS

| RANK | INDUSTRY | % OF IT STAFFING INCREASE |
|---|---|---|
| 1. | Government (federal, state and local) | 18% |
| 2. | Manufacturing (other than computers) | 11% |
| 3. | Computer manufacturing and services | 10% |
| 4. | Education | 7% |
| 5. | Communications | 2% |

## Career Counselor

**ADVICE FOR THE IT PROFESSIONAL**

# TIME TO GO?

*Many IT pros who haven't jumped ship for a new job or paycheck may be wondering if they should. Here's a quiz to help you decide how your current job stacks up*

### BY LINA FAFARD

Heck, it's no secret how tight the information technology job market is these days. And with all the talk about big bucks to be had at the *next* job, one can't help but wonder if the grass wouldn't be greener on the other side.

No doubt several of your friends are getting really good offers and are excited about their new opportunities. So what about you? You're probably so busy being pulled from project to project and working like an octopus that you haven't had the time to look around to see whether you should go or stay.

Or maybe the question hasn't crossed your mind. Perhaps you've been deleting all of those recruiters' calls or trashing their E-mail because you don't have the time to hear them out. Besides, everything is just fine where you are. Right?

Find out how good you really have it by taking the quick career-satisfaction quiz below, then total up the number of YESes and NOs. If you have 11 YES answers and one NO answer, stay put. You're in a *great* place. If your numbers aren't quite as good, you may need some resolution to your career's limitations.

### Answer YES or NO to the following

1. Is the work that you do an integral part of your company's success?
2. Are you learning and using new technologies to carry out your assignments?
3. Do you have an opportunity to take on more responsibility and get more compensation?
4. Are your ideas implemented?
5. Is your company advancing its position within its industry?
6. Do you feel happy in and proud of your work?
7. Do you enjoy working with your colleagues?
8. Do you have a technical/business mentor at work?
9. Will working at your company let you reach your technical and management career goals?
10. Are you recognized and rewarded for your accomplishments?
11. Do you feel overworked and underappreciated?
12. In the past year, did your company send you to at least one technical or leadership class?

Take the time to evaluate your career desires. If you can carry out your goals where you are, then stay. If not, it may be time to find a greener pasture.

If you don't feel challenged or motivated at work, perhaps all you need is a new assignment. Look at open positions in your organization to see if there's a more interesting place for you. If not, take a look (after work) at the openings on some of your company's competitors' World Wide Web sites to see if there's a more interesting, challenging and lucrative opportunity.

If you find better assignments at other companies, you might propose that you carry out that same type of assignment at your existing employer. If that's a no-go, it may be time to move on.

Before you move on to another position, score the opportunity using those same criteria. Most companies operate very similarly. Sometimes the tenure and comfort outweighs the new technology training and additional compensation you may receive from a new employer; sometimes it doesn't. It all boils down to your daily happiness, fulfillment and job satisfaction.

Take your results from this quiz and analyze where you are in your career. Decide where you want to go, and set a time line. If you aren't meeting your career goals, take the necessary steps to move up within your company or elsewhere. You deserve the career you create. □

---

*Fafard is vice president of training and marketing at The Partners (www.jobbrowser.com), a computer industry search firm in Torrance, Calif., that specializes in placing software professionals on the West Coast.*

# SAP

## IMMEDIATE NEEDS!

Long Term - Atlanta-based positions (100% travel throughout Georgia):

**FI/CO, MM, HR:**
**TEAM LEADS (2yrs+)**
**SUPER USERS**
**TRAINERS**

1975 North Park Place
Atlanta, GA 30339
800-599-9550 • 770-955-1714
FAX: 770-937-0423 • 800-457-9776
e-mail: slc11@aol.com
EOE, MEMBER NACCB

**STRUCTURED LOGIC COMPANY, INC.**
**SAP NATIONAL** Implementation Division

---

FRUIT OF THE LOOM.
UNCONDITIONALLY GUARANTEED

## ORACLE PROJECT MANAGER

Fruit of the Loom, a Fortune 500 company and world leader in the manufacture of basic apparel products, with 1997 sales of $2.1 billion and operations around the world, has an immediate opening at our corporate headquarters facility in Bowling Green, Kentucky

The ideal candidate will be a change facilitator who is able to manage large projects and bring them in on time and on budget. Will have experience as a Project Manager with a proven track record. Must be able to demonstrate ability to lead people to project completion. Must be innovative and a cutting-edge information systems professional. College degree or the equivalent experience is required, along with 5 plus years of Project Management experience. An ORACLE background is required, CPG experience is helpful.

We offer competitive compensation and attractive benefits. Please send your resume to:

**Oracle Project Manager**
**Dept. 7379**
**P.O. Box 2151**
**Louisville, KY 40201**

Equal Opportunity Employer

---

# SAP PROFESSIONALS

[illegible] international consultancy with a reputation [illegible] WORLDWIDE CAREER OPPORTUNITIES FOR TOP-QUALITY SAP PROFESSIONALS.

**CURRENTLY STAFFING PROJECTS IN:**

[illegible] Canada, South America, Pacific Rim, and Europe, especially in these skills and industries:

**Skills:** [illegible] PP [illegible] EDI [illegible]

**Industries and Areas of Expertise:** [illegible] Supply [illegible] Apparel [illegible]

**Sales:** [illegible]

**Recruiting:** [illegible]

Competitive compensation with performance incentives; comprehensive benefits package.

spearhead™
SAP National Implementation Partner

**SPEARHEAD SYSTEM CONSULTANTS (US) LTD.**
SAP National Implementation Partner

New York Information Technology Center
55 Broad Street
New York NY 10004
[illegible] 2 440 50 0 fax 2 2.440 001
[illegible]
1 888 [illegible]
www.spearhead.com

---

# Something for everyone.

***(Isn't that what any consultant would look for?)***

For more than 25 years, CPL WorldGroup has delighted customers across the U.S. with top talent. Are you ready to join us?

Right now we need contractors (P/A to S/A) with the following skills:

- **NATURAL/ADABAS**
- **NATURAL/CONSTRUCT**
- **PEOPLESOFT**

Interested? FAX or e-mail your resume to: CPL WorldGroup, 510/472-4904; contract@cplworldgroup.com

CPL WORLDGROUP

---

Tivoli has grown to become a leader in the industry because of our innovative practices and our dedicated employees. We have a strong commitment to both our employees and the marketplace and believe the best way to become successful is to invest in the right people, the right products, and the right technology that allow you to be your best. Right now, we have the following opportunities at our state-of-the-art facility in **Austin, TX:**

- **LOTUS NOTES ADMINISTRATOR**
- **UNIX ADMINISTRATOR**
- **IT APPLICATIONS DEVELOPER**
- **MANAGER, INTERNAL APPLICATIONS**
- **DIRECTOR OF TECHNICAL OPERATIONS**
- **WEB CONTENT DEVELOPER AND WRITER**
- **MANAGER, DATABASE ADMINISTRATOR**
- **DATABASE ADMINISTRATOR**
- **PROCESS ENGINEER**
- **NT ADMINISTRATOR**
- **SAP ADMINISTRATOR**
- **MANAGER, IT PROCESS DEVELOPMENT**

*Tivoli is committed to your success!* For immediate consideration, please forward your resume to: **Samantha Silver, TIVOLI SYSTEMS, Inc., 9442 Capital of Texas Hwy., North, Suite 500, Austin, TX 78759. Fax: 512-418-4151. Ph: 512-436-8404. E-mail: samantha.silver@tivoli.com** An equal opportunity employer, we value the diversity of our workplace.

**www.tivoli.com**

Tivoli

**Software Engineers** www.ge.com/medical/

We're bringing new meaning to proven skills.

At GE Medical Systems, we create the technology that helps medical professionals save lives. Our diagnostic imaging systems provide the tools for early detection of serious medical problems. Which in turn, makes a cure all the more possible. If you're looking for world-class technological challenges with uncommon rewards, consider joining our team of Software Engineers.

A variety of opportunities also exist in the following areas: **Engineering, Information Systems** and **Sales.**

When you join our team, not only will you receive an industry-leading compensation and benefits package, you'll also have the chance to work on significant challenges in a world-class technological environment. You'll find many opportunities for advancement.

To apply for a position, indicate GEMS AN190 on your resume and fax it to 513-583-7340. Or send it via e-mail to resume@opportunities.ge.com (use "resume" in subject heading). An acknowledgement letter will be sent to confirm receipt of your resume. Qualified individuals will be contacted. An Equal Opportunity Employer.

***GE Medical Systems***

*We bring good things to life.*

Lincoln Electric is a $1 billion manufacturer and distributor of top quality arc welding products. Continued growth has created exciting IS career opportunities within our Cleveland, Ohio facilities for experienced:

**MANAGERS**
**PROJECT LEADERS**
**SYSTEMS ANALYSTS**
**& PROGRAMMERS**

Large scale data center exposure and functional/systems knowledge in manufacturing is essential. SAP and/or client server experience a plus.

**TECH SERVICES**

We seek experienced Tech services pros to support OS (AIX, NT, Novell), ERP Products, Lotus Notes, LAN/WAN, Internet, Oracle DBA, RF Data Collection and End User Computing.

Creative, resourceful professionals, eager to accept a challenge are invited to join our dedicated, dynamic IT team. You'll use current technology and tools to accomplish meaningful business goals. **Interested candidates are invited to fax resume to: 216-383-8189.** Equal opportunity employer. Drug Free Workplace.

**LINCOLN® ELECTRIC**

Computer Consultant/Jr. Project Manager (Chicago): Analyze business procedures and computer systems and prepare software solutions to meet client needs. Lead team of 3-4 computer consultants in the design, development, testing and implementation of customized business systems software applications. Discuss systems goals and proposed software design with team of consultants. Delegate development responsibilities to Computer Consultants depending on individual experience and skill level. Troubleshoot project problems. Oversee projects involving the following computer-based methodologies: MVS, COBOL, CICS, DB2, IMS/DB, PL/1, CSP, CMS, VSAM, CLIST, JCL IBM ES9000 and IBM3090. Evaluate and improve effectiveness of data handling systems. Plan and prepare technical reports, memoranda and instructional materials for operational systems software. Prepare status reports for client. Travel to client sites throughout the U.S. 25-50% of the time. 40 hrs/wk, 9:00am-5:00pm, $58,000.00/yr. Must have a Bachelors degree in Computer Science or a related field (may include engineering, math, physics, chemistry, MIS or business) with 4 yrs exp in the job offered or 4 yrs exp as a computer software development specialist (may include programmer, programmer analyst, systems analyst, or software engineer). Through education or work experience, must have acquired software development skills in each of the following: 1) MVS; 2) COBOL; 3) CICS; 4) DB2; 5) IMS/DB; 6) PL/1; 7) CSP; and 8) CMS. Must have proof of legal authority to work permanently in the US. Send resume/ltr in dupl to: Illinois Dept of Employment Security, 401 South State Street - 7 North, Chicago, IL 60605, Attn: Leila Jackson, Ref# V-IL 18128-J. An employer paid Ad. No Calls.

# *To develop and grow, you need exposure to all the right elements*

**98**
CORPORATE
TECHNICAL
RECRUITING
CONFERENCE
COMPUTERWORLD

## ORLANDO FLORIDA

*May 17-20, 1998*
*Marriott's Orlando*
*World Center Resort*

*1-800-488-9204*

ROMAC INTERNATIONAL, selected to the Forbes Magazine list of America's 200 Best Small Companies for the second consecutive year, is seeking I.T. Professionals with IBM mainframe and client/server experience.

Full-time and consulting positions include:

- Mainframe Prog/Analyst - COBOL/CICS/DB2/IDMS/IMS
- Powerbuilder
- Informix and Oracle
- Visual Basic/SQL Server
- Sybase/SQL

ROMAC INTERNATIONAL offers outstanding fringe benefits, training and up to $2000 referral bonuses.

ROMAC INTERNATIONAL
4965 US Hwy 42, Ste. 2900
Louisville, Ky 40222
PH: (800) 682-9784 OR
(502) 339-2900
FAX: (502) 339-2888
E-MAIL: ssmith@romac.com
Equal Opportunity Employer

---

## DATA SOLUTIONS INTEGRATORS

Join our niche practices for Business Intelligence, Data Warehousing, Data Transformation, and Data Mining. We support leading tools and methods: ETI*EXTRACT, PRISM Warehouse Executive, Sagent, ACTA, and Informatica. Are you the unique consultant who can contribute to our high standards of excellence and merit the high salaries, benefits, and bonuses we pay? Are you experienced in the above? We will train you in these tools/methods. Do you have at least ten years of overall I.T. experience and 4 out of 5 of:

1. **Mainframe experience with COBOL, MVS, TSO, and JCL**
2. **Client/server experience with UNIX, C, and GUI**
3. **One or more large relational database management systems**
4. **Solid application programming background**
5. **Data migration/conversion warehousing experience**

Our clients are all over, and some international. You can live just about anywhere, some people are engaged long term in their domicile while others elect to travel full-time. Our website reveals our alliances & practices www.loganbritton.com. Please call (800)-362-4352, or fax resume to 713-266-0263, or e-mail resume to addvalue@loganbrittoncom.

---

## Integrated Systems Professionals

A Fast-Growing National Consultancy Offers Exciting Opportunities For Top Quality Professionals.

**Project Managers**
**Team Leaders/Consultants**

- Long-Term Career Opportunities
- Short-Term And Long-Term Contract Opportunities

*Experience in all SAP R/3 Modules Basis and ABAP*
*Oracle • PeopleSoft • Baan*

Performance-Based Compensation provides exciting opportunities for experienced professionals. (To $250K OR $150 per hour for experienced SAP experts)

**Please fax resumes to 516-625-0740 or visit us at http://www. iprr.com**

IPR INC.

---

## DIRECTOR TECHNOLOGY & INFORMATION SERVICES

Submit application and
other materials by
May 1, 1998 to:

George Gray, Director of
Classified Personnel
Human Resources Dept.
Salem-Keizer
Public Schools
1309 Ferry St. SE
Salem, OR 97301

This year round position. . .

- *Provides* leadership in technology & information services.
- *Supervises* the District's Technology and Information Services Department.
- *Implements* the District's comprehensive technology plan.

Benefits. . .

- *Competitive* salary.
- *Excellent* benefits package.
- *District-paid* retirement program.

Request a District Supervisor Application by calling the Salem-Keizer HR Dept. at 1-800-285-5484. EOE

SALEM-KEIZER PUBLIC SCHOOLS

---

## OUR INVESTMENT YOUR FUTURE

### *ATTRACTIVE TAX FREE PACKAGES*

*ABU DHABI is one of the most modern cities in the UAE, with an environment and wealth of facilities to guarantee the highest standard of living.*

*Our client is one of the largest global asset management firms with substantial funds under management. They are seeking to consolidate their current systems architecture, re-design and implement an exciting "best of breed" approach in order to enhance their strong competitive position.*

*Re-focusing on process controls a STP approach will involve a broad spectrum of securities systems for front/middle and back office systems. Business areas cover treasury, equities and fixed income and their associate derivative products and cover functional areas as deal analytics, execution, settlement and finance.*

*Technology skills include Unix, C++, Sybase, and NT in client server environment. Previous experience of packages in each of the areas a definite advantage as well as data migration, systems integration and testing.*

*We have been retained to deliver a mixed discipline team of Senior Business Systems Analysts and Project Leaders in the following fields:-*

| | |
|---|---|
| MIS | enterprise wide, application development support |
| Settlements | corporate actions, operations, transaction processing |
| Equities | trade flow analysis, business flow evaluation |
| Commodities | currency/interest rate options and futures |
| Research | equity based sales analytics |
| STP | end to end trade-flow evaluation |
| Bonds | fixed income and derivative product knowledge |
| Risk Management | analysis and design of enterprise wide systems |
| Quantitative Research | mathematical modelling, X product |
| BPI | business process reviews and performance optimisation |
| Treasury | cash management, package implementation, requirement definition |
| Accounting | product accounting, performance evaluation, commissions, revenue reporting |

**ADIA** require IT and business professionals with experience in a number of the disciplines mentioned and the ability to demonstrate a track record involving the design, definition and implementation of large scale securities trading systems. Applicants should be able to provide project management and analytical expertise, with enterprise wide system delivery experience preferred. All positions will be on a permanent employee basis.

*To find out more about the project, the rewards and the tax advantages please contact Parallel International, 1 Groveland Court, Bow Lane, London EC4M 9EH, quoting Ref: CWUS/PAB/UAE/3/98. Tel: +44 171 236 4288. Fax: +44 171 236 4277. Email: info@citielite.co.uk Website: http://www.citielite.co.uk*

ABU DHABI INVESTMENT AUTHORITY

---

## SENIOR MVS SYSTEMS PROGRAMMER

Montgomery County Public Schools headquartered in Rockville, Md. seeks an experienced OS/390 or MVS/ESA systems programmer. Additional VTAM and/or database experience is desirable.

Position offers training and hands-on implementations in LANRES, TCP/IP, UNIX, SMS, Open Edition, APPC, Cisco Routers, Windows NT and Web Servers.

MCPS is offering a competitive salary and flexible hours with an unequalled comprehensive benefits package which includes generous leave, health/dental/vision/life Insurances, flexible spending account, as well as many others.

Send cover letter and resume to:

**Dr. William Monie, Jr.**
**Division of Staffing**
**Montgomery County Public Schools**
**30 West Gude Drive**
**Rockville, Md. 20850**

Montgomery County Public Schools

or fax to:
Dr. William Monie, Jr.
301-279-3813

or e-mail to:
Dan_Hayes@fc.mcps.k12.md.us
(please use plain ascii text)

Visit the MCPS Web site at **www2.mcps.k12.md.us**
EOE

---

## Pacific Northwest

COMSYS
information technology services

COMSYS is a leader in the national IT market with over 4,000 consultants nationwide. Our strong ethics have led the Portland branch to 11 years of strong local market leadership & local success measured in double digits.

COMSYS has various openings in Portland for consultants with 3+ years of experience.

COMSYS offers a competitive compensation & benefits package. For immediate consideration, mail, fax or e-mail your resume to:

COMSYS Information Technology Services
10220 SW Greenburg Road, Suite 301,
Dept C, Portland, OR 97223,
Fax: (503) 293-3898.
Tel: (503) 293-2499,
Toll free: (888) 882-8326

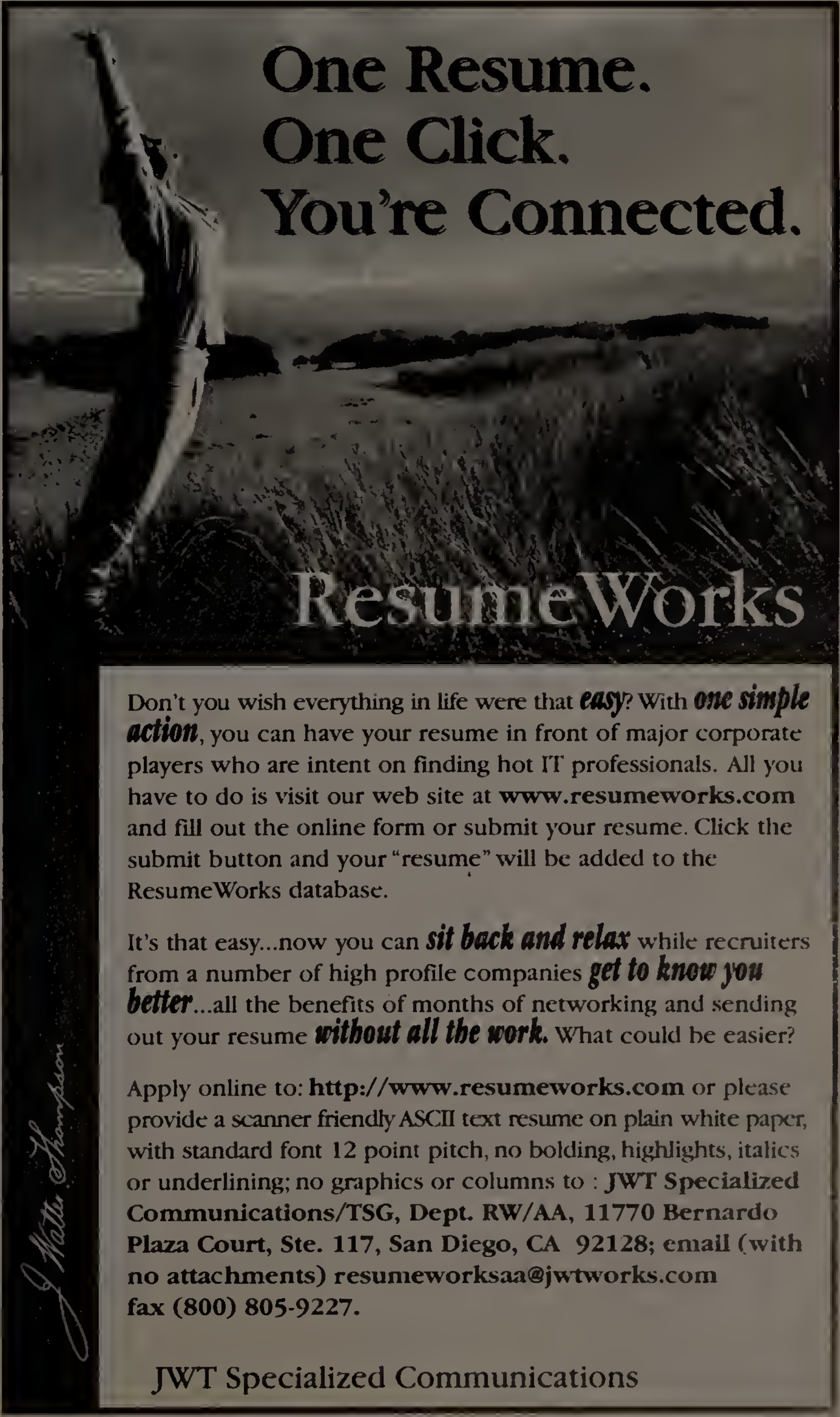
E-mail: jpatterson@comsysinc.com
Web: http://www.comsysinc.com
Equal Opportunity Employer

- Visual Basic
- SQL Server
- Oracle Financials

ORACLE Business Alliance Programme

- IEF/Composer
- DB2, CICS
- COBOL, CICS
- Assembler, CICS
- EDI

---


One Resume.
One Click.
You're Connected.
ResumeWorks
J Walter Thompson

Don't you wish everything in life were that ***easy***? With ***one simple action***, you can have your resume in front of major corporate players who are intent on finding hot IT professionals. All you have to do is visit our web site at **www.resumeworks.com** and fill out the online form or submit your resume. Click the submit button and your "resume" will be added to the ResumeWorks database.

It's that easy...now you can ***sit back and relax*** while recruiters from a number of high profile companies ***get to know you better***...all the benefits of months of networking and sending out your resume ***without all the work.*** What could be easier?

Apply online to: **http://www.resumeworks.com** or please provide a scanner friendly ASCII text resume on plain white paper, with standard font 12 point pitch, no bolding, highlights, italics or underlining; no graphics or columns to : **JWT Specialized Communications/TSG, Dept. RW/AA, 11770 Bernardo Plaza Court, Ste. 117, San Diego, CA 92128; email (with no attachments) resumeworksaa@jwtworks.com fax (800) 805-9227.**

JWT Specialized Communications

**Senior Programmer/Analysts, Programmer Analysts**

Minimum 2 years experience.
COBOL, CICS req'd. DB2 is a plus.
Will provide DB2 training.
Permanent Positions.
Compensation package includes bonus & stock options.
Full relocation & interview trip paid after phone interview.
Contract positions also available.
No H-1 sponsorship available.
RECRUITER INQUIRES WELCOME.
REFERRAL FEES AVAILABLE TO ANYONE.

E:mail Resume (Word)
& Salary Requirements to:
CW322@wdcorp.com
Western Data Corporation
FAX: 425-455-9810 Attn: Jennifer
1-800-444-5809 Attn: Jennifer or Steve

**IBM MAINFRAME**
**PACIFIC NORTHWEST**
**FULL RELOCATION PACKAGE AVAILABLE**

Senior Systems Analyst
Design, develop, implement, analyze, & modify sophisticated customized SAP R/3 Materials Management & Production Planning Software Systems for use by large multi-divisional companies. Confer with clients in analyzing operational software procedures, requirements, & products to improve existing software computer systems; & identifying & resolving system-specific issues. Design & modify computer software systems & functional specifications as required for various modules. Implement software design changes according to client objectives. Create user documentation requirements, generic user documentation for use by end-users, & module applications systems testing methodology. Other duties & responsibilities include but are not limited to providing high-level technical advice & training to on-site System Analysts, Programmers, & professional computer staff; & documenting assigned phases of each aspect of software design. Requirements: B.S. in Computer Science or related discipline & one (1) yr.'s work experience in SAP R/3. Must be knowledgeable & proficient in SAP R/3 software systems, & highly specialized computer software systems applications. 40 hrs./wk., Mon.-Fri., 8 a.m.-5 p.m., $145,000/yr. Send resume to CW-6289, Computerworld, Box 9171, Framingham, MA 01701-9171.

**Programmer Analyst** [10 Openings] [J.O.N. 6016994] Plan, develop, test and document computer programs; evaluate user requests for new or modified programs; and use Oracle Financial Modules, Oracle Manufacturing Modules, and Pro*C. Reqs. Bach. in Comp. Sci., Sys. Anal., CIS, Comp. Engg., Electrical Engg., Electronic Engg., Electronics and Communication or Mathematics or its equivalent in educ. & exp., plus 2 yrs. exp. in the job offered or in a related occup. as a Programmer, Programmer Analyst, Sr. Programmer Analyst, Systems Analyst, or Software Engineer. Will accept 3 yrs. of college educ., plus 3 yrs. in a related occupation in lieu of the required educ. and exp. Any exp. in a related occupation must have included 2 yrs. exp. using Oracle Financial Modules, Oracle Manufacturing Modules and Pro*C. Will also accept any equally suitable combination of educ., training and/or exp. which would qualify an applicant to perform the duties of the job offered. 40 hrs./wk., 9a-5p, M-F, $70,000.00/yr. Send resumes with J.O.N. to Terry Faust, Manager, Washington Job Center, 75 East Maiden St., Washington, PA 15301.

**Sr Software Engineer** — Develop client/server EDI/EC solutions through participation in the design & development of applications using (OOA/OOD), RDBS, C++/Unix, IPC & Rogue Wave programming skills. Req. MS/CS plus 1 yr exp. as software engineer. Sal. $63k/yr. Work 40hrs./wk. Resume to: Lisa Phillips, Harbinger Corporation, 1055 Lenox Park Blvd., Atlanta, GA 30319.

SOFTWARE ENGINEER needed for design, coding and implementation of Oracle applications & Systems level programming on UNIX and Windows NT servers. Master's required in Math, Computers, Engineering or any related field of study + 2 yrs. exp. in any occupation with above experience. Must be willing to relocate to various unanticipated work sites throughout U.S. every 4 to 10 months. Employer will pay for necessary travel between assignments. Must have proof of legal authority to work in the U.S. Salary: $58,000/ year for a 40-hour work week. Interested applicants contact the State of Florida, Department of Labor/Bureau of Operations, Non-Ag Alien Employment Certification Program, 1320 Executive Center Drive, Atkins Building, Suite 110, Tallahassee, FL 32399-0667; phone #(904) 414-6965, ext. 193. Refer to Job #FL-1765435. Ad paid by An Equal Opportunity Employer.

Database administrator to perform logical and physical design. of Oracle database; Code, test and implement Oracle scripts applying knowledge of Database Management Systems; calculate optimum values for Oracle database parameters; performance. tune Oracle databases; Model Oracle database security; manage back-up and recovery of Oracle databases; and make changes to Oracle database applications using knowledge of Oracle 7.3, SQL*DBA, Pro*C and PL/SQL. Requirements: Bachelor's degree in computer science or related field, two years experience as a database administrator or computer programmer, and knowledge of Oracle 7.3, SQL*DBA, Pro*C and PL/SQL. Salary: $65,000/year. Working conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week. Apply: PA Job Center, 345 Fifth Avenue, McKeesport, PA 15132. Job No. 8034481.

Programmer/Analyst. Perform software development & programming for sophisticated client business software packages, incl. Network Reservation system for video conferencing systems and World Wide Web related graphical user interface using HTML, CGI and JAVA. Implement and test client/server applications using UNIX operating systems, C and C++ programming languages, Informix SQL and ESQL/C. Requires: B.S. in Computer Science or a related field and 2 yrs. exp. in job offered. Salary: $50,000.00. EOE. Send resume (no calls) to: Sigma Designs, Inc., 9210 Twelvestone Dr., Roswell, GA 30076.

Programmer/Analyst - client sites in Westboro, MA & metro Boston area. Analyze needs; design, develop programs using Developer 2000; modify, enhance, test, code programs for database triggers & procedures; write software documentation. Bachs/Comp Sci. or Engg or Math. 18mos/exp. in job offered. 40hrs/wk (9-6; M-F) $48,000/yr. Send resume in dupl. to Case #71741, PO Box #8968, Boston, MA 02114.

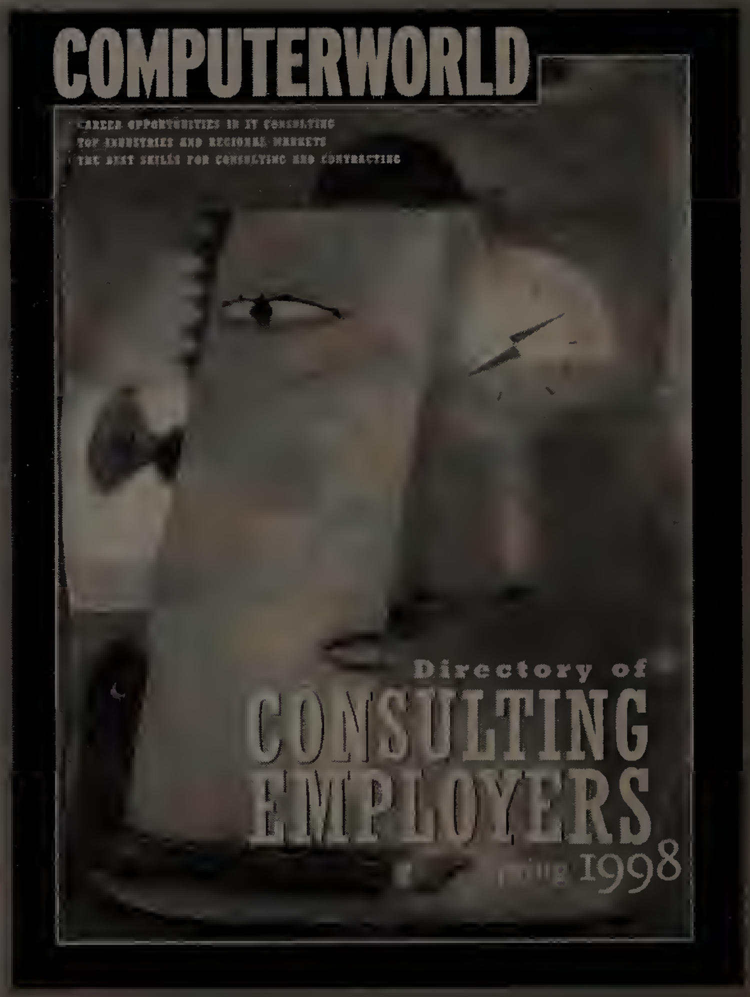
Software engineer with one (1) year of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with one (1) year of experience using ORACLE RDBMS, SQL*Forms, SQL*Reports and SQL. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. $60,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 8033093, to: Mr. Terry Kinney, Manager Armstrong County Job Center, 1270 N. Water St P.O. Box 759, Kittanning, PA 16201.

Software engineer with 2 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 2 years of experience using ORACLE RDBMS, Oracle Forms, Oracle Reports, SQL*Plus, PL/SQL, and Developer 2000. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Bachelor's degree in one of several limited fields: engineering, mathematics, computer science or physics. $65,000/yr. 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 7034010, to: Mr. Tom Rusnack, Manager Charleroi Job Center, 10 Paluso Dr, P.O. Box 210, Charleroi, PA 15022.

Software engineer with 2 years of experience as a s/w engineer or computer professional, who will develop s/w systems, applying computer science, engineering, and mathematical analysis, with 2 years of experience using Visual Basic, ORACLE RDBMS, SQL*Plus, and PL/SQL. Analyzes s/w reqs. and performs testing and user training after development. Extensive travel and frequent relocation. Master's degree in one of several limited fields: engineering, mathematics, computer science or physics. $65,000/yr, 40 hours/wk., 9:00 am - 5:00 pm. Send resumes, listing job order number 2017120, to: Mr. Teny Kinney, Manager, Armstrong County Job Center, 1270 N. Water St., P.O. Box 759, Kittanning, PA 16201.

COMPUTERWORLD
c@reers
computerworldcareers.com

# Find I.T. Consulting Careers Here


COMPUTERWORLD
CAREER OPPORTUNITIES IN IT CONSULTING
TOP INDUSTRIES AND REGIONAL MARKETS
THE BEST SKILLS FOR CONSULTING AND CONTRACTING
Directory of
CONSULTING
EMPLOYERS
Spring 1998

COMPUTERWORLD
c@reers

computerworldcareers.com

SOFTWARE ENGINEER to provide specialized software solutions at client sites using relational database design methodologies, Oracle, multiple hardware and software platforms, operating systems and TCP/IP to design, develop and deploy client/server applications; maintain Oracle databases using Oracle DBA, database/application bench-marking and workload simulation in heterogeneous networked environments using parallel processing methodology; tune modules to use Oracle optimize and formulate standards for PL/SQL development, client/server application partitioning and database sizing; perform data transfer/synchronization using replication/snapshots and code complex application logic using advanced PL/SQL, dynamic SQL, Developer/2000 and Designer/2000 toolsets; drawing system requirements and system delivery specifications, data analysis and performance tuning of very large Oracle distributed databases. Require: M.S. in Computer Science/Computer Engineering and one year experience in the described job duties or as Programmer/Analyst. 50% travel to client sites within the United States required. Coursework must include Database Management, Parallel Processing and Software Engineering. Experience may be full time or equivalent part time and include Oracle RDBMS. Salary: $61,000 per year, 8:30 am to 5:30 pm, M-F. Mail resume in duplicate to: Georgia Department of Labor, Job Order # GA 6211193, 2943 N. Druid Hills Road, Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

PROJECT MANAGER to design and develop high performance intelligent PCI RAID Controllers based on Intel i960 series of CPUs, Symbios 53C770 or 53C875 SCSI controllers, and state-of-the-art ASICs; Architect OEM specific storage products for top 5 PC companies in the world; Responsible for strategic long range planning and target market identification for RAID and SCSI products; Establish technological alliance with key customers and vendors; Coordinate the RAID product development from design to qualification by OEM; Research, develop and execute business and marketing plans along with marketing requirements statements; Responsible for product launches, marketing materials, press releases and participation in industry shows; Also responsible for long term forecasting and managing product shipments from manufacturing; Develop complete sales and technical training programs for internal support staff and customers. Require: M.S. degree (or equivalent) in Computer/Electrical/Electronics Engineering and two years experience in the job offered or in the related occupation of Hardware Design Engineer; A B.S. degree with five years of progressively responsible experience in the field will be considered equivalent to an M.S. degree. Salary: $65,000/year; M-F, 8:30 a.m. to 5:30 p.m. Send resume to: Xina Tuerke, Human Resources, American Megatrends, Inc., 6145-F Northbelt Pkwy., Dept. A, Norcross GA 30071; Attn. Job SS.

Project Manager needed for Fairfax, VA IT Co. Must have 2yr exp analyzing & evaluating customer reqmts for dsgn/dvlpmnt of new systms or modifying & improving existing systms for business solutions. Must have BBA. Respond to: HR Dept, Sun Light Technology Inc, 3829 Parkland Dr, Fairfax, VA 22033.

Full-time Project Manager, Object-Oriented Applications Development. Responsibilities include: manage object-oriented applications development; manage systems analysts and support staff; plan, monitor and prepare status reports; audit application quality to ensure adherence to Quality Management Systems; manage implementation of applications; manage user acceptance tests and user training; serve as chief liaison between client and Director of Applications Development; must have a Bachelor of Sciences degree or its foreign equivalent and at least five (5) years of experience in systems analysis for object-oriented applications in client/server environments or a Master of Sciences degree in Computer Science or a related field and three years of experience in systems analysis for object-oriented applications in client/server environments; must be fluent in Visual C++ and Borland C++ and worked with the Top End transaction monitor on 3-tier client-server applications; must be proficient in the use of object-oriented C++ class libraries including MFC and OWL; must be proficient in the application of object-oriented design methodologies Booch, Rumbaugh OMT and Jacobsen; must be willing to travel to client sites Monday-Friday. Must have proof of legal authority to work in the United States. Salary: $55,702-85,000 per year. If interested, submit resume in duplicate or apply in person: Georgia Department of Labor, Job Order # GA 6196969, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Office

Full-time Project Manager, Client/Server Development and Data Base Administrator. Responsibilities include: manage client/server applications development; manage systems analysts and support staff; plan, monitor and prepare status reports; audit application quality to ensure adherence to Quality Management Systems; manage implementation of applications; manage user acceptance tests and user training; serve as chief liaison between client and Director of Applications Development; manage installation and tuning of Sybase SQL Server; manage implementation of data base backup and recovery procedures; conduct capacity planning for application; provide 24-hour production support; must have a Bachelor of Science degree with a major field of study in Computer Science or a related field; must have at least five (5) years of experience in systems analysis for client/server development; must be proficient in the design, development and implementation of applications and data bases utilizing Sybase with APT WorkBench, DB-Library, C, CT-Library, Delphi, PowerBuilder, Magic, NatStar, Dynasty, SQR and Focus; must be willing to travel to client sites Monday-Friday. Salary Range: $55,702.00-$85,000.00 per year. Must have proof of legal authority to work in the United States. If interested, submit resume in duplicate or apply in person: Georgia Department of Labor, Job Order # GA 6197062, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Office

Programmer Analyst: Dsgn & implmnt a Predictive Dialer using Dialogic API; ability to programmatically cntrl T1 & PBX/ dvlp real-time parallel algorithms; applic to be implemented on Win NT 4.0 platform using C++ & OO Dsgn patterns; use multi-threaded constructs of io completion port & asynchronous io; do prgmg in COM & DCOM for client applic; must be able to encapsulate native d/base libraries for MS SQL/SYBASE & ORACLE; do TCP/IP n/work prgmg. Applicants must have BS-Comp Sci/Comp Engg w/ 1yr exp in job or as Prgmr. 40hr/wk, M-F, 9-5, $55K/yr. Send resumes only to Chris Eisdorfer c/o Technion Communications Corp., 6931 NW 88th Ave, Tamarac, FL 33321. Ref 1240.

Software Engineer. Research, analyze, design, & coordinate development; and develop, test, and imple. customized sys. software in conjunction with hardware development on a variety of business & industry applic's. Analyze software require's. to determine feasibility of design to develop bus. procedures, user requirements & programming feasibility. Design & develop software applic's. using the following comp. hardware & software: UNISYS A Series, DMSII, Cobol, Windows NT, Windows 95, Unix, Oracle, Powerbuilder, Delphi, Visual Basic. Must be willing to relocate within the United States on a project-by-project basis. Req'd. comp. applic's: Unisys A Series, DMSII, Cobol, Windows NT, Windows 95, & DOS, Netware 3.12, Windows for Workgroups 3.11, SADS, Powerbuilder, Delphi, Visual Basic, Sys. Architect, Oracle SQL*Forms, Oracle SQL*Reportwriter, Oracle PL/SQL, Oracle DMS, Watcom SQL. Must have Bach.'s or foreign degree equiv. in Econom.,. Comp. Sci. or related & 8 yrs' exper. in job offered or 8 yrs as Sys. Analyst, Analyst Programmer, Programmer, or related. Hrs: 9a-5p, M-F, $62,600 per yr. Apply to Georgia Dept. of Labor, Job Order #GA6212765, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or the nearest Dept. of Labor Field Service Office.

Software Engineer for specialized software development and consultancy company; Design, develop, test and implementation of various applications software on IBM AS/400. Thorough knowledge of J.D. Edwards application software for integration of various other application and to modify existing J.D. Edward's application as per the client/user requirements. Knowledge of IBM AS/400, TCP/IP communication to download/export data to/from various other platforms such as UNIX, PC/Windows NT Server. Job to be performed in Durham, NC and various unanticipated client sites throughout the United States, as assigned. Requirements: Bachelor's degree in Engineering or Math or Science or Computer Science and two years experience required either in the job offered or in the related occupation or as Software Consultant or Programmer Analyst. 9:00 AM to 6:00 PM, 5 days/40 Hrs.wk. Salary $45,000 yr. Resumes must include your Social Security number. Mail resumes to Job Service, 1105 Briggs Avenue, Durham, NC 27703. Refer to Job Order # NC3072821 and DOT code 030.062-010.

Ten full-time Technical Support Specialists responsible for the technical implementation, upgrades, and support of SAP products. Provide technical expertise, project planning, guidance, presentation, and instruction on SAP products to clients. Responsible for the configuration of database administration, change management, system infrastructure, and performance tuning using UNIX and Windows NT Server Administration, Database Administration Design, Networking, Client/Server Systems, Business Information Systems and Enterprise Planning Systems. Supports clients with programming, interfaces, installations, modifications and upgrades of SAP systems. Design technical architecture for integration of SAP with third-party products, for enhanced functionality. Acts as a liaison for troubleshooting: investigates, analyzes and solves programming/software issues. Must have a Bachelor's degree in Computer Science or Electrical Engineering or foreign degree equivalent. Must have one year of experience in the job offered or one year of experience in a position with same duties. Salary $90,000/yr. Send resume to: Georgia Department of Labor, Job Order # GA 6213623, 2943 N. Druid Hills Rd., Atlanta, GA 30329 or the nearest Department of Labor Field Service Office.

SOFTWARE ENGINEER (Location: Seneca, SC) to convert scientific, engineering and other technical requirements into software system specifications which conform with pre-existing system constraints; design, analyze, develop and maintain system software, application software and Graphical User Interfaces (GUI) using Pascal, C, C++, X-Windows/Motif, zApp Development Kit, Unix shell scripts, 4th generation languages and other development tools running on Solaris, HP-UX, SINIX, AIX, VMS, Netware, MSDOS, Microsoft Windows and Windows 95 environments in batch and online modes for standalone, networked and client/server environments incorporating TCP/IP and UDP protocols, and BSD sockets; analyze for system portability across multiple hardware systems and DBMS (including C-tree, Ingres, Oracle) platforms; test and debug software using Turbo Debugger, dbx and xdb; profile software using Turbo Profiler, prof, gprof and tprof; system modeling for support of computer networking, distributed processing and client/server applications; and perform validation testing and performance evaluation of computer systems and application software. Require: M.S. in Computer Science/Computer Engineering and two years experience in the described job duties. Coursework must include Computer Architecture, Software Engineering, Telecommunications Networks and Computer System Design. Ph.D. in Computer Engineering (or completion of all course requirements) may be substituted for M.S. degree and two years experience. Salary: $50,700 per year, 8:30 am to 5 pm, M-F, 40 hours per week. Apply by resume to: Ms. Regina D. Ratterree, E&T Technical Services, SCESC-2000711, P.O. Box 1406, Columbia, SC 29202.

Full-time Project Manager, Object-Oriented Applications. Responsibilities include: manage object-oriented applications development; manage systems analysts and support staff utilizing Visual C++, Borland C++ and working with the Top End transaction monitor on 3-tier client-server applications; manage the use of object-oriented C++ class libraries including MFC, OWL and the Rogue Wave toolset and design methodologies Booch, Rumbaugh OMT and Jacobson, monitor and prepare status reports; audit application quality to ensure adherence to Quality Management Systems; manage implementation of applications; manage user acceptance tests and user training; serve as chief liaison between client and Director of Applications Software Division. Travel as required to client sites throughout the United States Monday - Friday. Travel to India for training and setting-up client-specific quality processes. Must have a Master's degree in Management Sciences, Computer Science or a related field and three years of experience in systems analysis or a Bachelor of Science degree in Management Sciences, Computer Science or a related field and three years of experience in systems analysis. Salary Range: $55,702 to $85,000 per year. Must have proof of legal authority to work in the United States. If interested, submit resume in duplicate to: Ms. L. Anne Keller, NIIT (USA), Inc., 1050 Crown Pointe Parkway, Suite 900, Atlanta, Georgia 30338 Telephone:770/551-9494 ext. 6033

Programmer/Analyst wanted for IT Co in W. Conshohocken, PA. Must have 1yr exp analyzing, dsgng & implementing of s/ware using C/C++, Visual Basic, Rational Rose & ERWin in Unix, DOS & Win envrmnts. Bach-Comp Sci, Comp Engg or Electrical Engg. Respond to: HR Dept, Visient Corp., 1 Tower Bridge, Ste 800, W. Conshohocken, PA 19428.

With a reputation for superior quality, ADEPT is expanding 30% annually. We'll provide you with the resources, training and support to exceed your goals. Work with the best in the industry, shaping technology for the new century. Demand more and get it at ADEPT.

## Now that you're in demand, demand the best.

*Try the ADEPT Difference:*
- *Customized Client Pairing System*
- *Consultant Support Program*
- *Ongoing Satisfaction Surveys*
- *Award Winning Customer Service*

- **COBOL,VSAM**
- **CICS, COBOL**
- **COBOL, DB2 OR IMS**
- **ADABAS, NATURAL**
- **VISUAL BASIC**
- **ORACLE**

Benefits include Medical Insurance, 401(k) Plan with company matching, Section 125 Flexible Benefits Plan, direct deposit, generous referral bonus program, Professional Development Program.

*Please mail, fax or email your resume today!*
*ADEPT Inc., Attn: CW330*
*888 Worcester Road*
*Wellesley, MA 02181*
*Phone: 800-66ADEPT*
*Fax: 800-579-8933*
*Email: paper@adeptinc.com*
Member NACCB/
EOE

ADEPT

www.adeptinc.com

## SR. PROGRAMMER/ANALYST

Utility Business Services, Inc. (UBS), an NUI company, is a provider of customer information systems and services in the utility industry field. We currently have an immediate opening for a Senior Programmer/Analyst at our Union, NJ location.

The selected candidate will be responsible for coding programs for utility information systems (batch & on-line); conducting quality assurance testing; writing programming documentation; and interfacing with clients.

To be considered you must have a Bachelor's Degree or successfully completed training at an accredited programming school, and have 3+ years experience with mainframe programming, Natural/ADABAS preferred. Familiarity with Natural/Construct a plus.

In return, we offer a competitive salary and benefits package along with the satisfaction of joining a team of professionals committed to excellence. For consideration, please send resume indicating salary history and requirements to: Human Resources-Dept. P/A, NUI, One Elizabethtown Plaza, Union, NJ 07083. We are an Equal Opportunity Employer M/F/D/V.

NUI **Utility Business Services**

**OVERSEAS DEVELOPMENT DIRECTOR at Information Technology-Based Company.** Responsible for developing market in the United States and Asian region for information technology-based business, Also responsible for analyzing developing conceptual proposals to targeted markets/clients and arranging contact meetings. Qualified applicants must have a Bachelor's Degree in Accounting, Economics or Theology and be fluent in Cantonese, Hokkien, Hakka, Greek, Hebrew, Malay and Indonesian languages. Hours: 11:00am to 9:30pm. Salary $30,000.00 per year. Only persons authorized to work permanently in the United States need apply. Please forward resume to Ms. Jane Hosley, Alien Certification Program, JO#KY0369575, Department for Employment Services, 275 F Main St. 2-W, Frankfort, Kentucky 40621. **An equal opportunity employer.** Job Order #KY0369575.

**EC Cubed**
*components that make e-Commerce work*

EC Cubed, located in Fairfield County, CT is a cutting-edge, market leader of components offering mission critical e-commerce to Fortune 500 clients. We are growing quickly and offer unlimited opportunities with excellent compensation packages!

| | |
|---|---|
| ***Sr. Sales Executives:*** | Proven software/tools experience |
| ***Senior Engineers:*** | Java, C++, internet programming |
| ***Product Leads:*** | E-commerce, design skills, distributed architects, Java |
| ***Tech. Documentation:*** | Production & methodology experience |
| ***Sales Engineers:*** | E-commerce domain experience, technical background |

Please forward resume with salary requirements to
**HR: (203) 761-3951; 15 River Road, Wilton, CT 06897**
email: **phiggins@eccubed.com**

## Security Specialist

Watson Clinic LLP, a large multi-specialty group physician practice conveniently located between Orlando and Tampa, Florida, currently has a position available for a MIS Security Specialist.

This position requires a Bachelor's degree in Computer Science (or equivalent experience); 3 years experience with medical or financial computer applications with responsibility for security administration, maintenance or compliance; experience using 3270 security application (Alert, CA-Top Secret, etc.); and Novell Systems Administrator Certification (or equivalent experience). Strong written/oral communication skills and the ability to type on a CRT in order to write, test and document computer systems are also necessary.

For consideration, contact:
**WATSON CLINIC LLP, Human Resources**
**1430 Lakeland Hills Blvd., Lakeland, FL 33805**
**Phone (800) 356-5736 or Fax (941) 680-7598** EOE

---

## COLLEGE OF THE HOLY CROSS

*Worcester, MA*

### SOFTWARE DEVELOPER *(Multiple Openings)*

The College of the Holy Cross is approaching the challenges of IT with two related endeavors. First, we are investing $5.5 million in a capital improvement program. Second, we are creating an environment where the benefits of the new technologies will help to fulfill, even more effectively, the mission of the College.

The successful candidate will work closely with academic and administrative department heads on new projects, network service developments and system enhancements. Will also be responsible for translating customer needs into functional system requirements through the use of Joint Application Development facilitation and/or client interviewing. Perform design analysis, application development and technical documentation.

Qualifications: Bachelor's degree in Computer Science with 6-8 years experience.....Commitment to customer service, strong communication and interpersonal skills. Experience with VM5, COBOL, FOCUS Powerbuilder, Infomaker, Oracle and/or UNIX desired.

Please send resume and the names and telephone numbers of three references to: Employment Coordinator, College of the Holy Cross, PO Box PER, One College Street, Worcester, MA 01610-2395. Fax: 1-508-793-3575. Holy Cross is an Affirmative Action/Equal Opportunity Employer.

**Visit our website at www.holycross.edu.**

---

Data Architect - Provide architectural oversight and direction for new software products and product enhancements based on specifications. Train and assist application development personnel in the design of sound application data schemes and implementation of data-oriented client/server applications. Provide an interface between application development teams and the ADC organization in order to optimize default code generation from application specifications. Requirements include a Bachelor's Degree in Computer Science, MIS, or related field, or equivalent; with at least five years of experience in job offered or related field of relational database interfaces. Strong background in product management and training. Thorough knowledge of software design and implementation, object oriented technologies, and development of application generator using EOS. Applicants must have unrestricted authorization to work in the United States. Salary $90,000.00/year. 40 hours/wk. Respond with two copies of resume to Case # 71796. P.O. Box 8968, Boston, MA 02114.

---

Software Coordinator: Manage software devel projects. Provide tech guidance & supervise Software Engineers. Use function point analysis to est time & cost details for custom software devel projects. Monitor software devel done by external vendors. Enhance & maintain computer assisted picking system (CAPS) software for industrial & mfg use. Analyze customer requirements, prep functional specs, data analysis, design & data modeling. Use industrial engineering technique to propose best way of implementing system. QA testing of software. Complete cycle of software & hardware devel from customer specs to installation. Must have MS in Ind Eng or Comp Sci & 2 yrs exper leading software devel group. Must have knowledge of SCO-UNIX, UNOS Real-time kernel, Unify & Informix database, incl ISTAR, C, data modeling, function point analysis & complete cycle of software devel from client requirements to installation. 40 hrs/wk, 9-5 salary $64,692/year. If interested send 2 copies resume to: Job Order #98-109, P.O. Box 989, Concord NH 03302-0989

---

SYSTEMS ANALYST. Software develop. for relational databases. Req'd skills include analysis, data modeling, program design & implement., ORACLE databases under UNIX. Experience with following program languages & tools required C, SQL, ORACLE-Designer, ORACLE-Forms, ORACLE-Reports. Must be willing to relocate within the U.S. on a project-by-project basis. Computer Requirements: Operating Systems: UNIX, MS Windows; Programming Languages: C, SQL, PL/SQL, UNIX-Shell Programming; ORACLE Database; Development Tools: ORACLE CASE (Designer/ 2000), ORACLE Tools (Forms, Reports). Must have Bach. Degree or foreign degree equiv. in Management, Information Sys., or related & 2 yrs' work exper. in the job offered, or as Software Developer, Programmer/Analyst, or related. Hours 9a-5p, M-F, $59,400 per year. Apply to Georgia Dept. of Labor, Job Order #GA 6212317, 2943 N. Druid Hills Rd., Atlanta, GA 30329-3909 or nearest Dept. of Labor Field Service Office.

---

SOFTWARE ENGINEER: Proven ability in using AS/400 to develop database application using RPG/400, CL/400, Query/400, SQL/400 and COBOL/400; Experience in using AS/400 utilities such as Application Development Tools (ADT), Database Utility (DBU), Data File Utility (DFU), Program Development Manager (PDM) and Source Entry Utility (SEU); Demonstrated ability in using Application Software such as MAC-PAC and Premonos. The job duties are: Analysis of current procedures and problems to refine and convert the data to programmable form; determine output requirements; study existing system to evaluate effectiveness; upgrade systems presently in use; develop, test and implement new software; correct systems/programs as necessary. Requires Bachelors in Computer Science with two years experience in software development. 40 hours per week at $50,000/- per year. Please send resume to Case # 71834, PO Box # 8968, Boston, MA 02114.

---

Database Analyst: Designs, develops, implements, and modifies various in-house business systems software database based upon analysis of client's current procedures and operations to determine the most cost effective and efficient way of processing various data contained in software database systems. Determines appropriate computer information system needs as well as communication requirements to design software database solutions for implementation in various computer systems. Performs appropriate testing and modification of software database programs and develops appropriate graphic user interfaces using Visual Basic and other system tools. Performs all systems design and analysis using Powerbuilder as a front-end and SQL and SQL Server as a back-end for implementation in either Oracle or Sybase relational database. Requires Bachelor's degree in Computer Science. Also requires three years experience in the job to be performed. Hours: 9:00 a.m. - 5:00 p.m. 40 hours per week at $52,000.00 per year salary. Please send resume to: FDLES Bureau of Operations, 1320 Executive Center Drive, Suite 110, Tallahassee, FL 32399-0667, Re: Job order number FL-1766131.

---

Software Engineer. Design and develop three-tier client/server-based applications within mixed Windows and UNIX environments. Demonstrated ability in three-tier client/server application design using OOAD methodologies such as Booch, Rumbaugh, or Coad/Yourdon, OO Case Tools such as Rational Rose, OMT, STP, or Paradigm Plus; Demonstrated ability designing and coding 16-bit and 32-bit Windows-based GUI's using VB or VC++ using MFC, Windows SDK, DLL's, VBX or OCX; One year experience developing multi-threaded applications using C++, distributed objects, and middleware technologies such as TIB, COBRA, OLE/COM, DCE, or Encina; Demonstrated ability using ODBC, SQL triggers and stored procedures, using database systems such as MS SQL Server, MS Access, Sybase SQL server, or Oracle; Demonstrated ability in cross platform software development on UNIX platforms such as Solaris, HP-UX, AIX, Open Server, Sun. $65,000/yr 40 hr/wk. 9 a.m. - 5 p.m. Must have 2 yrs exp. and B.S. Comp Sci., Electr. Engineering rel. field/equiv. Send 2 resumes: Case #71806, P.O. Box 8968, Boston, MA 02114.

---

Senior Program Analyst/ Software Engineer project lead with three years of industry experience to design, develop and implementation software applications using Oracle, Developer 2000, PB, VB, SQL, C++, UNIX. Excellent communications skills required. Master's Degree, or a Bachelor's Degree and 5+ years experience. Fax resume to: Krishna Krovi, RKA: (617)227-3171 or email: kkrovi@raymondkarsan.com

---

PROGRAMMER. Information Systems Analyst needed for Ithaca, NY IT Co. Must have 2yr exp in job offd or 2yr as Systems Analyst; using RDBMS, Oracle, HTML on UNIX/NT web based envrmnts. Bach-Comp Sci needed. Respond to: HR Dept, Advanced CAE Technology Inc, 31 Dutch Mill Rd, Ithaca, NY 14850.

---

Database Administrator. $48K/yr, 8a-5p, 40hr/wk. Dsgn/install/configure & administer d/base & replication servers. Upgrade & support d/base & replication servers on 24x7 basis. Study & tune d/base & replication servers for high performance. Dvlp & implmnt d/base stds. Use RDBMS-SYBASE, ORACLE; Langs -SQL, PL/SQL, T-SQL, Shell Script, HTML, BASIC, CLIPPER; Operating systms - SOLARIS, UNIX, DOS & WINDOWS, NOVELL NETWARE; Packages - POWERBUILDER, APT, DBW, DEVELOPER 2000, Magic, Foxpro. Reqd.: Masters deg w/major in Comp Sci or Engg; Industrial, Electrical or Electronic or related field of Engg & 5yr in job offd or in related occupation as Systms or Software or Database professional. Special reqmt: Reqd 5yr exp work exp in job offd or in related occupation use of skills in Sybase & Oracle d/base; Replication servers; SQL, PL/SQL, T - SQL, Shell Script, HTML & Clipper langs; Solaris, Unix, Dos & Win, Novell Netware operating systms & Powerbuilder, Magic, Developer 2000, FoxPro packages. Job Loc - Lawrenceville, GA. Send resume or apply in person at: GADOL, JO#GA 6205823; 1535 Atkinson Rd, Lawrenceville, GA 30243-5601 or nearest Dept of Labor Field Service Office.

---

Senior Software Engineer. Design, develop, administer and test groupware applications using Lotus Notes in a multiple platform network environment. Knowledge in developing groupware applications using Lotus Notes Script programming. Demonstrated ability in setting up and administering heterogeneous computer networks. Knowledge in testing Lotus Notes applications on multiple platforms, such as OS/2, Windows and UNIX. $75,000/yr 40 hr/wk. 9 a.m. - 5 p.m. Must have 5 yrs exp (or 5 yrs exp in rel. occup. as Senior Field Engineer/ Systems Analyst) and B.S. Comp. Sci., Electronics. Eng. rel. field/ equiv. Send 2 resumes: Case #71652, P.O. Box 8968, Boston, MA 02114.

---

Programmer/Analyst needed for W. Conshohocken, PA IT Co. Must have 6mos exp analyzing, dsgng & implementing applics in Unix & Sun Solaris OS using Sparc C/C++. Bach-Comp Sci, Comp Engg or Comp Info Systms. Respond to: HR Dept, Visient Corp., 1 Tower Bridge, Ste 800, W. Conshohocken, PA 19428.

---

**BAY SEARCH GROUP**

National I/S Placement Specialists

VISIT OUR WEB PAGE
www.baysearch.com

Looking for:
Oracle, SYBASE, UNIX, Visual Basic PowerBuilder, Web Developers

1-800-637-5499
Fax: 1-888-737-9889

---

Programmer Analyst needed for Fairfax, VA IT Co. Must have 6 months exp analyzing, dsgng, dvlpg & implmntg internet/intranet applics using CGI, TCP/IP, perl, HTML & JAVA; also systm tuning of Unix. Bach-Comp Sci needed. Respond to: HR Dept, Sun Light Technology Inc, 3829 Parkland Dr, Fairfax, VA 22033.

---

Project Engineer. Direct and coordinate planning, design and development of computer software systems and hardware interfacing, as a part of an engineering project. Develop software for data acquisition systems using C++ and Visual C++ and interface with mechanical and electromechanical devices. Develop Internet applications using HTML and Java for communicating the data obtained from the above data acquisition systems. Analyze knowledge based systems, provide time estimates for completion of project, develop test plans for the software development project and use software engineering management tools to exercise functional authority over the engineering project. Review software and hardware design for compliance with engineering principles and client's functional and cost requirements. 40 hours per week, 7:30 am to 4 p.m. Salary $3866.67 per month. Minimum requirements include a Master's Degree in Mechanical or Electrical Engineering plus at least 1 year's work experience in the job offered or in the related occupation of a Software Engineer. The 1 year's work experience must be in software development using C++/Visual C++ for Data Acquisition Systems. Must have proof of legal authority to work permanently in the U.S. Interested applicants should apply to the nearest Job Service Office or submit a resume to: Job Service, 742-F East Chatham Street, Cary, NC 27511. Reference Job Order number NC5701039 and DOT code 030.062-010. All resumes must include the applicant's Social Security number.

---

PROFESSIONAL RESOURCE SERVICES

**Professional Resource Services,** An IT Search firm, has new listings in:

**Wisc, Chicago & Minneapolis**
BaaN Analyst, SAP Practice Mgr, SAP Consultants, contract & permanent. Peoplesoft Practice Mgr. Peoplesoft Consultants, Peoplesoft Analysts, Oracle DBA, Developers & Datawarehousing. Visual C++ & Delphi Developers. MF & C/S Software Testers. PC Network Support, NT & 95. AS/400 Programmers.

**Charlotte, NC & Atlanta, GA:**
Networking Eng, WIN95, WINNT, Exchange, Developers, Oracle Datawarehousing, DBA & data modeling.

email resume
sandrad@prs2000.com
Phone: 800-729-5746
Fax: 414-938-0681

**Visit our web site for detailed job descriptions**
http://www.prs2000.com

*EOE & EMPLOYER PAID*

---

INFO SYSTEMS. Sr Financial Systems & Practices Analyst wanted for Ft Myers location Info Tech Co. Must have 4yr exp planning, scheduling, directing preparation of fin'l systms dvlpmnt & implmntn of prgms to process data & solve fin'l problems using computers; using Unix, Oracle, Perl, Pascal, Cobol, SQL & C++. Bachelor's In Finance, Acctg, Info/Comp Systms or equiv. Respond to: Attn: KL/HR/II, Gartner Group, 56 Top Gallant Road, Stamford, CT 06904. Fax: 203-316-6594.

---

SOFTWARE ENGINEER to design, develop, implement, integrate, maintain and support application software using object-oriented techniques and methodologies, C++, object-oriented case tools, Roguewave Tools.h++, make, Shell Scripts, xdb, purify, quantify, X-Windows, and Motif on SUN Solaris workstations. Require: M.S. degree in Computer Science with one year of experience in the job offered; Extensive paid travel on assignments to various unanticipated client sites within the US. Salary: $81,000 per year, 8:30 am to 5:30 pm, M-F. Apply by resume to: Roz L. Alford, A.S.A.P. Co., Inc., 3495 Buford Highway, Duluth GA 30097; Attn: Job AR.

---

COMPUTERWORLD
c@reers

computerworldcareers.com

# Get the edge.

But there's more to our service than just publishing ads. We can introduce you to IT opportunities that match your exact requirements and background. Give us information about yourself and the type of opportunity you're looking for by filling out a brief questionnaire on the Web site. Then, using advanced push technology, we'll e-mail you targeted jobs—only those that are the perfect fit.

**www.metrocareers.com**

and register for our free e-mail employment service.

# COMPUTER PROFESSIONALS

***You've Just Entered a Whole New Universe... These Opportunities Are Out of This World!***

Galaxy Latin America™ (GLA) is the multinational company formed to provide the DIRECTV™ service to Latin America and the Caribbean, and deliver direct-to-home satellite television entertainment to the region. The service provides the best entertainment options in Spanish, Portuguese, and English offering programming from the United States, Europe, Latin America, and Asia. GLA is currently seeking qualified applicants for the following positions based in Ft. Lauderdale, Florida.

## SOFTWARE DEVELOPER/PROGRAMMER

**Job Code: Req 98099**

*The selected candidate will specify, design and develop new systems and modify existing software for data broadcast head-end and client systems. Requirements include a BSCS or BSEE with 3+ years in the design and implementation of program software. Additional experience should include internet/intranet infrastructure design and applications development, programming experience in C++/Visual Basic, Java, HTML, Active X and scripting in NT server and UNIX environments. Strong applications life-cycle design and development, test and documentation experience along with excellent interpersonal and communication skills required. Significant travel may be required.*

## NETWORK ENGINEER

**Job Code: Req 98100**

*BSCS or BSEE with 5+ years design/operation of LAN/WANs for high speed real time data transfer experience required. TCP/IP, UDP, X25, multicasting experience in NT and UNIX environments necessary. Excellent oral and written communication skills required; Spanish/Portuguese proficiency preferred. Duties will include specifying requirements and implementing a data broadcast system based on an existing, but not fully developed, system. Some travel may be necessary.*

In return for your professional abilities, we offer an attractive compensation and benefits package. For immediate consideration, please send or fax a cover letter along with your resume and salary history, indicating desired job code, to **Galaxy Latin America, Job Code_______, P.O. Box 24800, Ft. Lauderdale, FL 33307. Fax: (954) 958-3341.**

No phone calls please. Equal Opportunity Employer.

DIRECTV.

Galaxy Latin America GLA

**COMPUTER** -Systems Hardware Analyst needed for NY City Data Networking Co. Must have 2yr exp analyzing data network reqmnts, PC LAN/WAN & intranet systm dsgn; evaluating client needs & determine, recommend plan layout for type of comps & peripheral equip or modifications to existing systm. Respond to: HR Dept, Syscom (USA) Inc, 45 Broadway, NY, NY 10006

**PROJECT MANAGER** needed for Somerset, NJ location for Parsippany, NJ IT Co. Must have 2yr exp managing multiple mid to large size projects on various OS & applics; coord cross organizational groups: architecture, dvlpmnt, prdctn, systm test & s/ware qlty assurance. Must have Bach-Comp Sci, Engg or Info Sci. Respond to: Global Consultants Inc, 601 Jefferson Rd, Ste LL, Parsippany, NJ 07054.

**SYSTEMS ANALYST** needed for Jersey City, NJ Comp Systems Co. Must have 2yr exp analyzing fin'l s/ware modifications; using C, Fortran, Visual Basic, Paradox & SQL. Respond to: HR Dept, DKB Data Service (USA) Inc, 95 Christopher Columbus Dr, Jersey City, NJ 07032. Fax (201) 200-6122.

# Let Metro Careers Work for You.

## Register now.

Discover the best IT career opportunities in your neighborhood before they appear in print! Fill out the questionnaire at:

**www.metrocareers.com**

and register for our free e-mail employment service.

# NOTICE OF POSITION AVAILABLE

## SFA PROJECT MANAGER

Multiple Openings; serve as a Chief Computer Systems Analyst responsible for design and development of computer systems and networks between U.S. subsidiary employing 1,000+ and German parent employing 8,500+; manage data modeling using relational models; utilize an ORACLE database management system, Visual Basic, C and Visual C++ programming languages in a UNIX environment to manage the design, development, integration, installation, correction, maintenance, enhancement, customization and testing of Heidelberg's Computer Sales Force Automation ("SFA") System.

Direct maintenance of a distributed database architecture implemented around the country on 11 local networks and secure that communication and data synchronization over the frame relay wide area network. Manage assurance of database integrity and data consistency throughout different information levels. Establish and tune a UNIX release 10.X environment to ensure a maximum up time and adequate performance of the system. Select and specify hardware and software that will ensure an upgrade path for future technology.

Supervise professionals and support staff, including Programmer Analyst, Systems Programmer, Database Administrator, Network Specialist, PC Specialist and Professional consultants. Resolve user's technical questions and problems; conduct technical training of local programming staff. Serve as computer network liaison with German parent company responsible for drafting progress, status and computer based training reports for the sales force, regional staff and corporate staff in German and English; and translating, developing and maintaining technical documentation in German and English.

Must have Bachelor Degree or foreign equivalent in Computer Science, Information Systems, or Mathematics and at least 5 years of experience in developing SFA Systems for capital goods in a multi-departmental environment with at least 100 remote users.

Salary: $62,750 to $75,000 per year; 40 hours per week.

Must be authorized to work without employer limitation in the United States. If interested, send resume to:

**HEIDELBERG**

Attn: Dierdre Petee, Manager, Human Resources
1000 Gutenberg Drive
Kennesaw, GA 30144

EOE/Drug Free An Affirmative Action Employer M/F/D/V

---

AS/400 Support Specialist. 40 hrs/wk, 9am-5pm. $38,000/yr. Network system administration incld'g user support & problem solving. Telephone & voicemail system management. Evaluates, tests & recommends data communications hardware & software for purchase. User support & problem solving for data communications problems. Tools: AS/400; Novell; CCMAIL. B.S. in Elec. Engr. or *Computer Science as well as 3 mos. in job offered or Network Administrator required. *B.S. in any engr'g field + 1 yr exp in software development also acceptable. Must be a certified Novell administrator. Previous experience must include: telephone mail management; Novell. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605, Attention: Brenda Kelly, Reference #V-IL-17744-K. NO CALLS. An Employer Paid Ad.

---

Software Engineer to design, develop and test computer programs for business applications; analyze software requirements to determine feasibility of design; direct software system testing procedures using expertise in Powerbuilder 5.0, PFC, Unify, Oracle and C. Requirements: Bachelor's degree in computer science or related field, two years experience as a software engineer or computer programmer, and knowledge of Powerbuilder 5.0, PFC, Unify, Oracle and C. Salary: $57,000/year. Working conditions: 8:00 A.M. to 5:00 P.M., 40 hours/week. Apply: PA Job Center, 653 East High Street, Waynesburg, PA 15370. Job No. 6017216.

---

98
CORPORATE TECHNICAL RECRUITING CONFERENCE
COMPUTERWORLD

ORLANDO
FLORIDA
*May 17-20, 1998*
*Marriott's Orlando World Center Resort*
*1-800-488-9204*

---

**Hardware/Software Engineering • IS/IT Network, Data & Telecommunications • Programming • Internet**

**INTERVIEW WITH MORE THAN 50 EMPLOYERS AT THE**

**CCC TECHNICAL Career Convention**

**SOUTHERN CALIFORNIA'S PREMIERE HIGH-TECH JOB FAIR**

COMPUTERWORLD c@reers
Our Tech Journal Partner

**TUESDAY, APRIL 28, 1998**

THE QUEEN MARY
1126 Queens Highway • Long Beach, CA 90802
Exhibit Hours: • 11:00 am-1:00 pm & 3:00 pm-7:00 pm
Seminar begins at 10:00 am

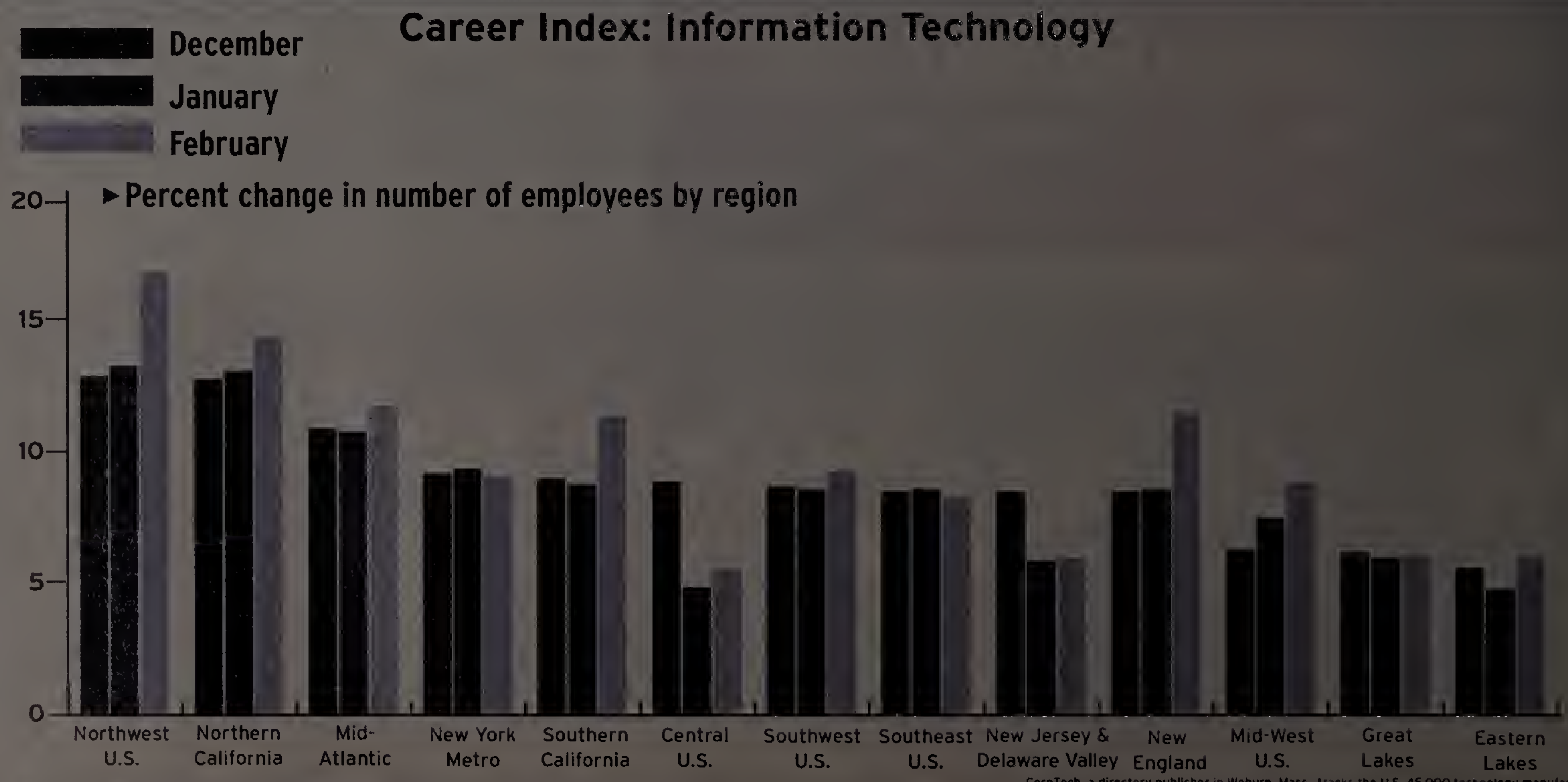
Business Attire, Resumes and 3 or More Years Experience Required
No One Under 21 Years of Age Will Be Admitted

**FREE ADMISSION**

Event Management by Shomex Productions

---

## CAREER SURVEY



Copyright 1998, Corporate Technology Information Services, Inc., Woburn, MA

CorpTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology manufacturers. This survey relates to the 31,693 tracked firms with fewer than 1,000 employees.

# Women in technology international

**DONNA SHIRLEY**
MANAGER,
MARS EXPLORATION PROGRAM

BOARD MEMBER,
WOMEN IN TECHNOLOGY INTERNATIONAL

It was the 1950's, and Donna Shirley was taking mechanical drawing instead of home economics. In college, her advisor told her girls couldn't be engineers. She replied, "Yes, I can."

On July 4, 1997, the world watched as the Sojourner Rover rolled across the rough terrain of Mars. Donna Shirley led the team that designed Sojourner.

When asked what advice she would give to young women who want to be engineers, she replied: "Be brave. Persevere. You have to really want to do it. You have to follow your passion."

*As a featured speaker at the Technology Summit, you'll have the opportunity to meet Donna personally.*

## ENVISION THE POSSIBLE

THE BUSINESS OF TECHNOLOGY
MARCH 26-27, AUSTIN, TEXAS
▼
SEPTEMBER 17-18,
ATLANTA, GEORGIA
▼
OCTOBER 19-20,
BOSTON, MASSACHUSETTS

TECHNOLOGY SUMMIT
JUNE 24-26,
SANTA CLARA, CALIFORNIA

CREATING NEW POSSIBILITIES FOR WOMEN TO ADVANCE AND SUCCEED IN TECHNOLOGY.

WITI

COMPUTERWORLD
c@reers

WWW.WITI.ORG ▼ 800.334.WITI

FREE PRODUCT/CAREER EXPO

For information on advertising, call 800-343-6474

# Marketplace

**Looking For The BEST Company To Give You The BEST Value In IBM Computer Hardware?**

**We're IBM Experts:**
- RS/6000
- ES/9000
- AS/400
- Series/1
- PCs
- Networks & Integration

**Sales & Rentals**

✓ Processors
✓ Peripherals
✓ Upgrades
✓ New
✓ Reconditioned
With warranty

-Product Specialists
-Pretested equipment
-Flexible financing
-Configuration planning
-Offices nationwide
-Technical support
-Overnight shipping

IBM Business Partner

http://www.dempseybus.com
e-mail: dempsybus@dempseybus.com

**Dempsey BUSINESS SYSTEMS**
2136 Michelson Drive · Irvine, CA 92612-1304
Phone: (714) 475-2900 Fax: (714) 475-2929

**Buy • Sell • Rent (800) 888-2000**

**Alicomp**

*Which has serviced over 195 diverse clients, specializes in providing VM, MVS, VSE service to clients who need:*

**•OUTSOURCING**
**•REMOTE COMPUTING**
**•YEAR 2000: Mainframe Conversion Test Environment**
**•TAPE CONVERSIONS**
**•SYSTEMS PROGRAMMING & NETWORKING SUPPORT SERVICES**

*Industry experience includes:* •Financial Services •Non Profit •Software Developers •Healthcare •Manufacturing/Distributing •Publishing

***We are the "Boutique" of the Computer Services World***

*Serving Clients since 1980*

**(201) 840-4900 • (800) 274-5556**

**Cyrix 200+ MMX System**

| | |
|---|---|
| • 512k Cache | • 2.0 Gig Hard Drive |
| • 16 Meg EDO RAM | • Mouse/pad |
| • 1.44 Floppy | • Keyboard |
| • Mini Tower Case | • 1 Meg EDO Video |

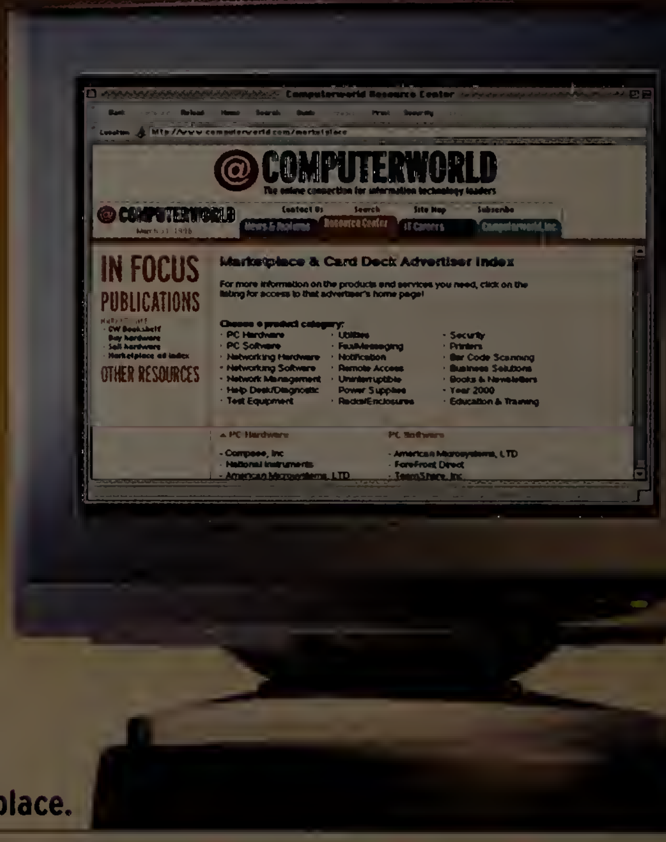
**$399.00**
Monitor and Operating System sold separately

DXM Computer, Inc. www.dxmusa.com
1 (888) 434-0017 • Fax 1 (401) 434-0260

Prices subject to change without notice.
Complete spec's visit our web site

NOTICED
PLACE AN AD IN
COMPUTERWOR
MARKETPLAC

online product info


Computerworld Resource Center
http://www.computerworld.com/marketplace
@COMPUTERWORLD
The online connection for information technology leaders
IN FOCUS
PUBLICATIONS
OTHER RESOURCES

Marketplace & Card Deck Advertiser Index

For more information on the products and services you need, click on the listing for access to that advertiser's home page!

Choose a product category:
- PC Hardware
- PC Software
- Networking Hardware
- Networking Software
- Network Management
- Help Desk/Diagnostic
- Test Equipment
- Utilities
- Fax/Messaging
- Notification
- Remote Access
- Uninterruptible Power Supplies
- Racks/Enclosures
- Security
- Printers
- Bar Code Scanning
- Business Solutions
- Books & Newsletters
- Year 2000
- Education & Training

For easy access to information on those hard-to-find products and services you need, visit the Marketplace ad index in the Resource Center of @Computerworld.

Check it out. Bookmark it and visit frequently for immediate access to vendors' web sites. Let us know what you think! Contact Laurie Gomes (laurie_gomes@cw.com) with your comments and suggestions.

It's easy. And there's only one URL to remember: www.computerworld.com/marketplace.

Advertisers note: Call 1-800-343-6474 extension 8249 for information about direct response advertising opportunities in Computerworld.

**COMPUTERWORLD**

## ADVERTISERS INDEX

Acer America . . . . . . . . . . . . . . . . . . 13
*http://www.acer.com*

Amdahl . . . . . . . . . . . . . . . . . . . . . . . 15
*http://www.amdahl.com*

American Power Conversion . . . . . . 73
*http://www.apcc.com*
888-289-APCC

Angel Group . . . . . . . . . . . . . . . . . . 56
*http://www.angelgroup.com*

Cap Gemini . . . . . . . . . . . . . . . . . . 48*
*http://www.capgemini.com*

Compaq Computer Corp. . . . . . . . . . . . . . . . . . . . . 26-27
*http://www.compaq.com*

Computer Associates . . . . . . . . . . . . 5
*http://www.cai.com*

Computer Channel . . . . . . . . . . . . . 40
*http://www.compchannel.com*

Compuware . . . . . . . . . . . . . . . . 46-47
*http://www.compuware.com*

Deloitte & Touche Consulting Group (ICS) . . . . . . . . . . . . . . . . . 10
*http://www.deloitte-ics.com*

Digital Equipment Corp.. . . . 52-53, C3
*http://www.digital.com*

Gateway 2000 . . . . . . . . . . . . . . 62-63
*http://www.gateway.com*

Global Innovators Sereies. . . . . 40/41

Hewlett-Packard . . . . . . . . . . . . . 22-23
*http://www.hp.com*

Information Builders . . . . . . . . . . . C4
*http://www.ibi.com*

Intersystems Technologies Corp. . . 21
*http://www.intersys.com*

Landmark . . . . . . . . . . . . . . . . . . . . . 11
*http://www.landmark.com*

Lawson Software . . . . . . . . . . . . . . 54
*http://www.lawson.com*
(800)477-1357

Lucent Technologies . . . . . . . . . . . . 17
*http://www.lucent.com*

MCI . . . . . . . . . . . . . . . . . . . . . . . . . . 9
*http://www.mci.com*

Meta Group . . . . . . . . . . . . . . . . . . . 28
*http://www.metagroup.com*

Micron . . . . . . . . . . . . . . . . . . . . . . . 25
*http://www.micron.com*

Millennia III . . . . . . . . . . . . . . . . . . 77*
*http://www.millennia3.com*

NCR . . . . . . . . . . . . . . . . . . . . . . . . . 64
*http://www.ncr.com*
(800) CALL-NCR x3000

Oracle Corp. . . . . . . . . . . . . . . . . . . . 7
*http://www.oracle.com*

Peoplesoft . . . . . . . . . . . . . . . . . 18-19
*http://www.peoplesoft.com*
(800)947-7753

Platinum Technology . . . . . . . . . 35-37
*http://www.platinum.com*

Rougue Wave Software . . . . . . . . . 69*
*http://www.rougewave.com*

SAS Institute . . . . . . . . . . . . . . . 66-67
*http://www.sas.com*

StorageTek . . . . . . . . . . . . . . . . . 30-31
*http://www.storagetek.com*

Syncsort . . . . . . . . . . . . . . . . . . . . . C2
*http://www.syncsort.com*

TIBCO . . . . . . . . . . . . . . . . . . . . . . . 42
*http://www.tibco.com*

Toshiba . . . . . . . . . . . . . . . . . . . 58-59
*http://www.toshiba.com*

Viasoft . . . . . . . . . . . . . . . . . . . . . . 38
*http://www.viasoft.com*

* Application Development Select Edition

This index is provided as an additional service. The publisher does not assume any liability for errors or omissions.

## HAVE A PROBLEM WITH YOUR COMPUTERWORLD SUBSCRIPTION?

We want to solve it to your complete satisfaction, and we want to do it fast. Please write to:

**Computerworld, P.O. Box 2043, Marion, Ohio 43305-2043.**

Your magazine subscription label is a valuable source of information for you and us. You can help us by attaching your magazine label here, or copy your name, address, and coded line as it appears on your label. Send this along with your correspondence.

### Address Changes or Other Changes to Your Subscription

All address changes, title changes, etc. should be accompanied by your address label, if possible, or by a copy of the information which appears on the label, including the coded line.

Your New Address Goes Here Address shown: ☐ Home ☐ Business

Name
Company
Address
City State Zip

### Other Questions and Problems

It is better to write us concerning your problem and include the magazine label. Also, address changes are handled more efficiently by mail. However, should you need to reach us quickly the following toll-free number is available: 1-800-552-4431 Outside U.S. call (740) 382-3322. Internet address: circulation@cw.com

COMPUTERWORLD allows advertisers and other companies to use its mailing list for selected offers we feel would be of interest to you. We screen these offers carefully. If you do not want to remain on the promotion list please write to the following address – COMPUTERWORLD, Circulation Department, 500 Old Connecticut Path, Framingham, MA 01701.

Name
Title
Company
Address
City
State
Zip

## SALES OFFICES

**COMPUTERWORLD HEADQUARTERS:** 500 Old Connecticut Path, PO Box 9171, Framingham, MA 01701-9171
Phone: (508) 879-0700, Fax: (508) 875-4394

**Publisher**
Jim Martin

**Vice President/Enterprise Publishing Group**
Elaine R. Offenbach

**Regional Vice President North/Central**
Sherry Driscoll

**Regional Vice President Southwest**
Ron Hall

**Regional Vice President Northwest**
Linda Holbrook

**Regional Vice President East**
Christopher E. Thomas

### NORTH/CENTRAL

Director: Isabelle Kane; Senior District Manager: Laurie Marinone; Account Executive: Dianne McNeil; Sales Operations Manager: Leslie Murray; Sales Associates: Karen Beasley, Cheryl Giangregorio, Samantha Hadley, 500 Old Connecticut Path, Framingham,MA 01701 (508) 879-0700 Fax: (508) 270-3882 TDD: (800) 428-8244

Senior District Manager: Blayne Long; Sales Associate: Jasmine Huffman, 875 N. Michigan Avenue, Suite 2846, Chicago, IL 60611 (312) 943-4266 Fax: (312) 943-2214

Senior District Manager: Jennifer Hedges; Senior Sales Associate: Brenda Shipman, 14651 Dallas Parkway, Suite 118, Dallas, TX 75240 (972) 233-0882 Fax: (972) 701-9008 TDD: (800) 822-4918

### EAST

Director: Fred LoSapio; District Manager: John Bosso; Account Executive: Maureen Grady; Sales & Office Associate: Susan Kusnic; Senior Sales Associate: Jean Dellarobba; Sales Associates: Kristen Majerczak, John Radzniak, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289 TDD: (800) 208-0288

Director: Lisa Ladle-Wallace, 5242 River Park Villas Dr., St. Augustine, FL 32092, (904) 284-4972 Fax: (904) 284-9831

### NORTHWEST

Senior District Manager: Leslie Hutchinson; District Managers: Angela Flores, Denyce Kehoe; Account Executives: Kevin Ebmeyer, Larisa Gagainis, Marc Wilkie; Sales Associates: James Dunn, Alicia Giovannini, Amy Hudson; Operations Coordinator: Emmie Hung; Office Services: Jessica Abude; Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (650) 347-0555 Fax: (650) 347-8312 TDD: (800) 900-3179

Director: Sharon Chin; Senior Sales Associate: Jilly Colley, P.O. Box 52861, Bellevue, WA 98015 (425) 451-0211 Fax: (425) 451-0133

### SOUTHWEST

Director: Ernie Chamberlain; Senior Account Executive: Claude Garbarino; Account Executive: Monica Kormoczy; Sales Associates: Bonni-Jo Bouchard, Brian Shindledecker; Operations Coordinator: Emmie Hung; Office Services: Jessica Abude; Sales Coordinator: Yvonne Zuniga, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (650) 347-0555 Fax: (650) 347-8312 TDD: (800) 900-3179

Senior District Manager: Cindy Wager; Account Executive: Robert Pietsch; Senior Sales Associate: Pat Duhl, 2171 Campus Drive, Suite 100, Irvine, CA 92612 (714) 250-3942 Fax: (714) 476-8724

### ADVERTISING OPERATIONS PRINT & ON-LINE

Display Advertising Coordinators: Lisa Tanner, Gregg Pinsky, (508) 879-0700 Fax: (508) 879-0446

### ENTERPRISE PUBLISHING GROUP

**Boston:** Director of Operations/Carolyn Medeiros; Project Coordinator/Heidi Broadley; Managing Editor/Peter Bochner; Graphic Designer/Gail Varney, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 879-0700 Fax: (508) 875-6310

**San Francisco:** Director/Michele Gerus; Account Executive/Andrea Zurek; Senior Sales Operations Coordinator/Nikki Wilson, 500 Airport Boulevard, Suite 400, Burlingame, CA 94010 (415) 347-0555 Fax: (415) 347-8312

**East:** Director/Kim Bailey, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-0090 Fax: (201) 587-9255, (201) 587-1289

### MARKETPLACE/DIRECT RESPONSE CARDS

Sales Manager/Laurie Gomes, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8249 Fax: (508) 875-3701

**East:** Account Director/Norma Tamburrino, Mack Center 1, 365 West Passaic St., Rochelle Park, NJ 07662 (201) 587-8278 Fax: 201-712-0430

**Midwest:** Account Director/Linda Clinton, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 820-8288 Fax: (508) 875-3701

**California, Alaska, Hawaii:** Account Executive/Jason Bishop, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8009 Fax: (508) 875-3701

**West:** Account Executive/Maureen Roberti, 500 Old Connecticut Path, Box 9171, Framingham, MA 01701-9171 (508) 271-8007 Fax: (508) 875-3701

### COMPUTERWORLD INFORMATION MANAGEMENT GROUP

**Computerworld Buyers Database East:** (508) 879-0700 Fax: (508) 879-0184

**Computerworld Buyers Database West:** (415) 347-0555 Fax (415) 347-8312

### RECRUITMENT ADVERTISING SALES OFFICES

Marketing Director/Derek E. Hulitzky; Operations Director/Cynthia Delany, 500 Old Connecticut Path, Framingham, MA 01701-9171 (800) 343-6474

**New England & Upstate New York:** Regional Manager/Nancy Percival, 500 Old Connecticut Path, Framingham, MA 01701 (800) 343-6474, Senior Account Executive/Nancy Mack, (800) 343-6474

**Mid-Atlantic:** Regional Manager/Jay Savell, 961 Marcon Blvd., Suite 409, Allentown, PA 18103 (610) 264-7700, Senior Account Executive/Caryn Dlott, (800) 343-6474 TDD: (800) 208-0288

**South Atlantic:** Regional Manager/Katie Kress-Taplett,3110 Fairview Park Drive, Suite 1100, Falls Church, VA 22042 (703) 876-5053, Product Manager/Pauline Smith (800) 343-6474

**Midwest:** Regional Manager/Pat Powers, 1011 East Touhy Avenue, Suite 550, Des Plaines, IL 60018 (847) 827-4433, Account Executives/Nicholas Burke, Susan Hammond, (800) 343-6474 TDD: (800) 227-9437

**Northwest:** Regional Manager/Christopher Glenn, 500 Airport Blvd., Ste. 400, Burlingame, CA 94010 (415) 665-2443, Account Executive/Chris Connery, (800) 343-6474

**West:** Regional Manager/Ellen Moody, 2171 Campus Drive, Ste. 100, Irvine, CA 92715 (714) 250-0164, Account Executive/Kate Angelone (800) 343-6474 TDD: (800) 203-5867

**MARKETING:** *Reseorch Director/Morketing Monoger*/Stuart C. Dale, *Marketing Speciolist*/Emily Dinneen **CIRCULATION:** *Vice President Circulotion*/Maureen Burke **PRODUCTION:** *Production Director*/Christopher P. Cuoco, *Production Monager*/Beverly Wolff **DISTRIBUTION:** *Distribution Monager*/Bob Wescott, *Troffic Monager*/Pat Walker

## COMPUTERWORLD

**President/CEO**
Jim Martin

**Vice President/Marketing**
Cynthia L. Ahart
(508) 820-8272

**Chief Operating Officer**
Bob Ainsworth
(508) 820-8200

**Vice President of IS**
Richard Broughton
(508) 620-7700

**Vice President/Recruitment Advertising**
John Corrigan
(508) 820-8273

**Vice President/Editor**
Paul Gillin
(508) 620-7724

**Vice President/General Manager New Media & Information Mgmt.**
Richard Mikita
(508) 628-4766

**Senior Vice President/Consumer Marketing**
Gail Odeneal
(508) 820-8234

**Vice President/Human Resources**
Susan C. Perry
(508) 820-8160

**Senior Vice President/Finance**
Matthew C. Smith
(508) 820-8102

## INTERNATIONAL DATA GROUP

**Chairman of the Board**, Patrick J. McGovern **President**, Kelly Conlin **Chief Operating Officer**, Jim Casella

IDG

Computerworld is a publication of International Data Group, the world's largest publisher of computer-related information and the leading global provider of information services on information technology. International Data Group publishes over 285 computer newspapers and magazines and 500 book titles in 80 countries. Sixty million people read one or more International Data Group publications each month.

# The Week in Stocks

## Gainers / Losers

### PERCENT

| Gainers | | Losers | |
|---|---|---|---|
| Concentric Network Corp. (H) | 40.8 | Security Dynamics Tech. | -32.7 |
| Lycos Inc. (H) | 36.3 | Data Race Inc. (L) | -25.0 |
| Network Solution Inc (H) | 32.0 | CompUSA Inc. | -22.2 |
| Corel Corp. | 28.8 | Quarterdeck Corp. | -17.2 |
| Netrix Corp. | 28.6 | Centura Software | -16.1 |
| SCB Computer Tech. Inc. (H) | 23.0 | Netscape Comm. Corp. | -11.4 |
| MathSoft | 22.2 | General Datacomm Inds. | -10.4 |
| Pegasus Systems (H) | 20.2 | Madge Networks NV | -10.2 |

### DOLLAR

| Gainers | | Losers | |
|---|---|---|---|
| Lycos Inc. (H) | 15.94 | Security Dynamics Tech. | -13.38 |
| Yahoo! Inc. (H) | 10.50 | CompUSA Inc. | -5.75 |
| Lucent Tech. (H) | 10.44 | Computer Task Group | -4.06 |
| Network Solution Inc (H) | 9.63 | Intel Corp. | -2.56 |
| Amazon.com (H) | 8.69 | Oracle Corp. | -2.50 |
| Concentric Network Corp. (H) | 7.75 | Gateway 2000 Inc. | -2.38 |
| Rambus Inc | 7.00 | Netscape Comm. Corp. | -2.19 |
| Excite, Inc. | 6.19 | 3 COM Corp. | -2.00 |

## INDUSTRY ALMANAC

### Investing in the future

Sportsline USA, Inc. (Nasdaq: SPLN) and N2K, Inc. (Nasdaq: NTKI) have a lot in common: They are World Wide Web-based ventures seeking online profits. Each has teamed with well-established, brand-name partners. And each traded last week for close to $30 per share even though profits are far in the future.

Sportsline, a Fort Lauderdale, Fla.-based sports news provider, has a $57 million advertising agreement with CBS Corp. in New York. CBS promoted Sportsline during its television coverage of "March Madness," the National Collegiate Athletic Association basketball tournament, and during the Winter Olympics in Nagano, Japan. As part of the five-year deal, Sportsline renamed its Web site *cbs.sportsline.com*.

Despite a net loss of $7.55 million in the fourth quarter last year, Sportsline's stock price went from $10 when it went public in November to about $30 last week.

N2K, which sells music at its online store, Music Boulevard (*www.musicblvd.com*), has an exclusive distribution agreement with America Online, Inc. in Dulles, Va. New York-based N2K, which lost $13.2 million in its recent quarter, has also seen its stock rise even though it doesn't expect to become profitable until 2000.

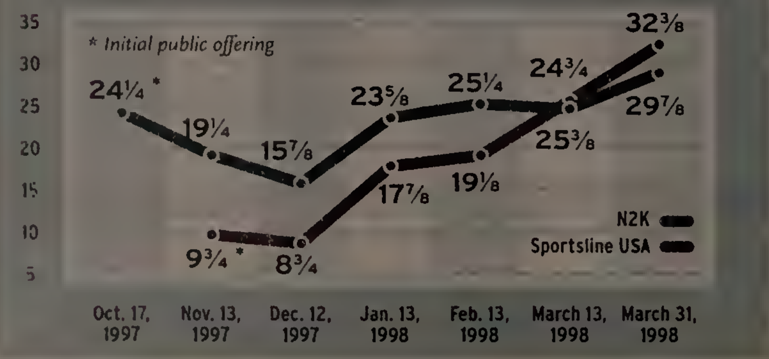
Investors are buying those stocks "based on assumptions about how large the market opportunity is for each company," says Andrea Williams, a financial analyst at Volpe Brown Whelan & Co. LLC in San Francisco. Only a few online companies — such as America Online and Yahoo, Inc. in Santa Clara, Calif. — are making money, she says, but more Internet-based companies will turn a profit this year.

John Randles, chief financial officer at Fogelman Properties, Inc. in Memphis, says, "You look at whether or not they have a novel idea and a plan to get to profitability."

— Patrick Thibodeau

### BETTING ON THE FUTURE

Lack of earnings hasn't scared investors away from two Internet-based companies that went public last fall



| Exch | 52-Week | Range | | Apr. 3 2pm | Wk Net change | Wk Pct change |
|---|---|---|---|---|---|---|
| **Communications and Network Services** | | | | | | **UP 3.1%** |
| COMS | 59.69 | 24.00 | 3 COM Corp. | 34.31 | -2.00 | -5.5 |
| AIT | 49.88 | 27.63 | AMERITECH Corp. (H) | 49.81 | 1.63 | 3.4 |
| ASND | 60.00 | 22.00 | Ascend Communications | 39.31 | 2.06 | 5.5 |
| T | 68.50 | 30.75 | AT & T | 66.31 | -0.38 | -0.6 |
| BNYN | 6.50 | 1.19 | Banyan Systems Inc. | 5.56 | -0.63 | -10.1 |
| BAY | 41.88 | 15.63 | Bay Networks Inc. | 26.00 | -1.81 | -6.5 |
| BEL | 106.00 | 56.75 | Bell Atlantic Corp. | 103.06 | 1.31 | 1.3 |
| BLS | 68.44 | 39.38 | Bellsouth Corp. (H) | 68.44 | 4.44 | 6.9 |
| BRKT | 19.63 | 9.25 | Brooktrout Technology (H) | 19.31 | 1.31 | 7.3 |
| CS | 46.50 | 12.63 | Cabletron Systems | 14.25 | -1.06 | -6.9 |
| CGRM | 21.88 | 8.56 | Centigram Communications | 13.13 | 0.13 | 1.0 |
| CSCO | 71.38 | 30.19 | Cisco Systems Inc. (H) | 71.38 | 1.69 | 2.4 |
| CMNT | 6.13 | 3.31 | Computer Network Tech. | 4.50 | -0.13 | -2.7 |
| CNCX | 26.75 | 7.88 | Concentric Network Corp. (H) | 26.75 | 7.75 | 40.8 |
| DIGI | 32.75 | 16.50 | DSC Communications | 19.06 | 1.94 | 11.3 |
| FORE | 21.81 | 10.88 | FORE Systems Inc. | 17.19 | 1.88 | 12.2 |
| GDC | 9.50 | 3.25 | General Datacomm Inds. | 5.38 | -0.63 | -10.4 |
| GSX | 53.00 | 36.13 | General Signal Networks | 46.56 | -0.13 | -0.3 |
| GTE | 62.56 | 40.50 | GTE Corp. (H) | 62.56 | 3.44 | 5.8 |
| LU | 73.44 | 24.94 | Lucent Tech. (H) | 73.44 | 10.44 | 16.6 |
| MADGF | 9.19 | 3.25 | Madge Networks NV | 5.50 | -0.63 | -10.2 |
| MCIC | 50.88 | 27.31 | MCI Commmunications Corp. | 50.88 | 1.19 | 2.4 |
| NETM | 5.25 | 2.09 | NetManage Inc. | 3.91 | -0.16 | -3.8 |
| NTRX | 3.00 | 0.63 | Netrix Corp. | 2.25 | 0.50 | 28.6 |
| NCDI | 14.50 | 5.88 | Network Computing Devices | 10.56 | 0.38 | 3.7 |
| NWK | 22.38 | 11.25 | Network Equipment Tech. | 17.56 | 2.13 | 13.8 |
| NN | 69.38 | 18.94 | Newbridge Networks Corp. | 26.63 | -0.88 | -3.2 |
| NT | 65.88 | 31.06 | Northern Telecom Ltd. (H) | 64.69 | 0.69 | 1.1 |
| NOVL | 11.13 | 6.28 | Novell Inc. | 10.31 | 0.06 | 0.6 |
| ODSI | 16.50 | 5.19 | Optical Data Systems Inc. | 5.94 | 0.00 | 0.0 |
| PCTL | 14.13 | 5.63 | Picturetel Corp. | 6.81 | 0.03 | 0.5 |
| PTON | 3.50 | 0.97 | Proteon Inc. | 1.22 | -0.03 | -2.5 |
| RACO | 4.13 | 1.00 | Racotek Inc. | 3.38 | -0.19 | -5.3 |
| RADS | 29.38 | 7.00 | Radiant Systems Inc | 23.00 | -0.56 | -2.4 |
| RETX | 7.63 | 3.38 | Retix | 5.75 | 0.88 | 17.9 |
| SBC | 46.56 | 24.63 | SBC Communications | 44.13 | 0.50 | 1.1 |
| SFA | 24.94 | 14.00 | Scientific Atlanta Inc. | 19.38 | -0.19 | -1.0 |
| SHVA | 16.44 | 8.06 | Shiva Corp. | 10.00 | -0.50 | -4.8 |
| FON | 75.63 | 42.25 | Sprint Corp. | 68.44 | 0.06 | 0.1 |
| QWST | 41.06 | 13.19 | QWest Communications | 38.88 | -1.19 | -3.0 |
| SMSC | 18.13 | 8.00 | Standard Microsystems Corp. | 9.63 | 0.38 | 4.1 |
| USW | 58.00 | 31.13 | U S West Inc. (H) | 58.00 | 3.31 | 6.1 |
| XIRC | 18.75 | 7.50 | Xircom | 14.56 | 0.25 | 1.7 |
| XYLN | 27.19 | 12.38 | Xylan Corp. | 27.19 | 4.56 | 20.2 |
| **PCs and Workstations** | | | | | | **UP 0.3%** |
| AAPL | 29.56 | 12.75 | Apple Computer Inc. | 26.94 | -0.19 | -0.7 |
| CPQ | 39.75 | 14.25 | Compaq Computer Corp. | 25.94 | -0.50 | -1.9 |
| DELL | 71.94 | 16.56 | Dell Computer Corp. | 67.63 | -0.38 | -0.6 |
| GTW | 48.75 | 19.38 | Gateway 2000 Inc. | 44.88 | -2.38 | -5.0 |
| HWP | 72.94 | 48.13 | Hewlett Packard Co. | 62.63 | -0.56 | -0.9 |
| MUEI | 25.38 | 8.44 | Micron International Inc. | 13.88 | 1.25 | 9.9 |
| NIPNY | 74.00 | 48.63 | NEC America | 51.88 | -0.38 | -0.7 |
| SGI | 30.31 | 10.94 | Silicon Graphics | 14.00 | 0.25 | 1.8 |
| SUNW | 53.31 | 25.88 | Sun Microsystems Inc. | 41.25 | 0.25 | 0.6 |
| **Large Systems** | | | | | | **UP 1.2%** |
| DGN | 37.94 | 13.38 | Data General Corp. | 18.75 | 1.63 | 9.5 |
| DEC | 62.63 | 25.00 | Digital Equipment Corp. | 53.00 | 1.06 | 2.0 |
| IBM | 113.50 | 63.63 | IBM | 104.81 | -0.06 | -0.1 |
| MDCD | 5.75 | 2.88 | Meridian Data Inc. | 4.38 | -0.06 | -1.4 |
| NCR | 43.38 | 25.63 | NCR Corp | 34.56 | 1.94 | 5.9 |
| PRCM | 18.63 | 7.00 | ProCom Technology, Inc. | 7.97 | -0.53 | -6.3 |
| SQNT | 31.25 | 14.63 | Sequent Computer Sys. | 18.88 | -0.06 | -0.3 |
| TEXM | 6.00 | 2.19 | Texas Micro Inc | 3.75 | 0.00 | 0.0 |
| SRA | 60.75 | 30.38 | Stratus Computer Inc. | 45.75 | 1.38 | 3.1 |
| UIS | 20.19 | 5.75 | Unisys Corp. | 18.88 | -0.13 | -0.7 |
| **Software** | | | | | | **UP 2.1%** |
| ADBE | 53.13 | 33.50 | Adobe Systems Inc. | 46.88 | 1.50 | 3.3 |
| AMSWA | 15.63 | 5.38 | American Software Inc. | 7.88 | 0.75 | 10.5 |
| APLX | 12.50 | 3.13 | Applix Inc. | 6.13 | 0.56 | 10.1 |
| ARSW | 53.25 | 17.00 | Arbor Software | 48.13 | 1.94 | 4.2 |
| ARDT | 15.13 | 5.88 | Ardent Software | 13.88 | 0.25 | 1.8 |
| ARSC | 32.50 | 17.75 | Aris Corp. | 29.75 | 1.00 | 3.5 |
| ADSK | 51.13 | 28.88 | Autodesk Inc. | 44.94 | -1.38 | -3.0 |
| BMCS | 86.75 | 39.63 | BMC Software Inc. (H) | 85.38 | 5.00 | 6.2 |
| BOOL | 25.69 | 13.13 | Boole and Babbage | 24.25 | 0.00 | 0.0 |
| BORL | 12.19 | 5.88 | Borland Int'l Inc. | 9.28 | 0.34 | 3.8 |
| BOBJY | 16.75 | 6.63 | Business Objects | 15.94 | 0.94 | 6.3 |
| CAYN | 4.25 | 0.94 | Cayenne Software Inc. | 2.59 | -0.09 | -3.5 |
| CNTR | 3.88 | 0.88 | Centura Software | 1.47 | -0.28 | -16.1 |
| CHKPF | 50.50 | 17.63 | Checkpoint Software | 42.88 | 0.19 | 0.4 |
| COGNF | 35.00 | 17.63 | Cognos Inc. | 27.13 | -1.88 | -6.5 |
| CA | 58.63 | 25.00 | Computer Associates | 55.13 | -1.44 | -2.5 |
| CPWR | 51.25 | 15.56 | Compuware Corp. | 49.00 | -0.69 | -1.4 |
| CSRE | 14.63 | 4.25 | Comshare Inc. | 7.81 | -0.13 | -1.6 |
| COSFF | 6.75 | 1.40 | Corel Corp. | 2.66 | 0.59 | 28.8 |
| DWTI | 5.38 | 2.13 | Dataware Technologies Inc. | 3.63 | 0.13 | 3.6 |
| FILE | 50.63 | 9.50 | Filenet Corp. (H) | 48.50 | 4.88 | 11.2 |
| FRTE | 25.38 | 4.94 | Forte Software | 8.13 | 0.94 | 13.0 |
| FTPS | 6.38 | 1.50 | FTP Software Inc. | 2.97 | -0.31 | -9.5 |
| GPSI | 39.63 | 20.38 | Great Plains Software, Inc (H) | 39.00 | 6.00 | 18.2 |
| HUMCF | 54.25 | 22.00 | Hummingbird Comm. Ltd. | 34.00 | -0.75 | -2.2 |
| HYSW | 46.00 | 13.00 | Hyperion Software Corp. | 44.75 | 2.88 | 6.9 |
| IRIC | 20.00 | 11.75 | Information Resources | 16.25 | 0.50 | 3.2 |
| IFMX | 12.44 | 4.00 | Informix Corp. | 8.81 | 0.72 | 8.9 |
| INGR | 14.19 | 6.25 | Intergraph Corp. | 7.88 | -0.88 | -10.0 |
| LEAF | 4.00 | 0.81 | Interleaf Inc. | 2.88 | 0.00 | 0.0 |
| ISLI | 21.25 | 6.25 | Intersolv Inc. | 17.25 | 0.19 | 1.1 |
| INTU | 53.25 | 21.25 | Intuit Inc. | 49.25 | 1.44 | 3.0 |
| JDEC | 40.63 | 24.88 | J.D. Edwards Co. | 36.88 | 3.50 | 10.5 |
| TLC | 25.00 | 5.50 | Learning Co. (The) (H) | 25.00 | 2.50 | 11.1 |
| LGWX | 14 63 | 4.13 | Logic Works (H) | 13.25 | -0.31 | -2.3 |
| MAPS | 14.25 | 7.88 | MapInfo Corp. | 12.13 | 0.75 | 6.6 |
| MATH | 4.63 | 2.19 | MathSoft | 4 13 | 0.75 | 22.2 |
| MENT | 13 13 | 6.50 | Mentor Graphics | 10.06 | -0.13 | -1.2 |
| MIFGY | 60.63 | 19.13 | Micro Focus | 47.13 | -0.31 | -0.7 |
| MGXI | 14.00 | 4 50 | Micrografx Inc. (H) | 13.50 | 0.44 | 3.3 |
| MSFT | 92.38 | 45.31 | Microsoft Corp. (H) | 92.38 | 4 00 | 4.5 |
| OBJS | 2.97 | 0.44 | ObjectShare, Inc. | 2.97 | 0.06 | 2.2 |
| OMTL | 15.00 | 8.25 | Omtool Ltd | 12.13 | -0.75 | -5.8 |
| ORCL | 42 13 | 17.75 | Oracle Corp. | 28.69 | -2.50 | -8.0 |
| PMTC | 34.88 | 18.75 | Parametric Technology | 33.25 | -0.31 | -0.9 |
| PSFT | 56.38 | 15.31 | Peoplesoft (H) | 55.50 | 4.00 | 7 8 |
| PTEC | 18.38 | 11.00 | Phoenix Technologies | 11.94 | -0.38 | -3.0 |
| PSQL | 25.00 | 6.50 | Platinum Software | 21.44 | -1.56 | -6.8 |
| PLAT | 31.13 | 10.25 | Platinum Technology | 23.63 | -1.25 | -5.0 |
| PRGS | 32.13 | 15.63 | Progress Software Corp. (H) | 30.75 | 1.13 | 3.8 |
| RNBO | 30.00 | 13.75 | Rainbow Technologies Inc. | 28.13 | 2.50 | 9.8 |
| REDB | 11.63 | 5.00 | Red Brick Systems Inc. | 5.94 | 0.00 | 0.0 |
| ROSS | 5.94 | 1.75 | Ross Systems, Inc. | 3.16 | 0.22 | 7 4 |
| SAPE | 48.31 | 15.00 | Sapient Corp. (H) | 47 63 | 1.88 | 4.1 |
| SCOC | 7.25 | 3 13 | SCO Inc. | 4 88 | 0.00 | 0.0 |
| SDTI | 44.38 | 23.88 | Security Dynamics Tech | 27.56 | -13.38 | -32.7 |
| SOTA | 22.25 | 8.88 | State of the Art | 22.25 | 0.00 | 0.0 |
| SSW | 57.63 | 27.50 | Sterling Software Inc. | 57.06 | 0.69 | 1.2 |
| SDRC | 30.00 | 15.25 | Struct. Dynamics Research | 27.34 | 3.47 | 14.5 |
| SYBS | 23.63 | 6.88 | Sybase Inc. | 9.31 | -0.09 | -1.0 |
| SYMC | 29.50 | 12.00 | Symantec Corp. | 27.94 | -0.25 | -0.9 |
| SNPS | 47.13 | 23.00 | SynOpsys | 32.94 | 0.25 | 0.8 |
| SSAX | 17.63 | 3.88 | System Software Assoc. | 7.63 | -0.44 | -5.4 |
| SYSF | 14.50 | 3.00 | Systemsoft Corp. | 3.81 | 0.13 | 3.4 |
| BAANF | 50.25 | 21.38 | The Baan Co. | 47.25 | 0.88 | 1.9 |
| TRUV | 5.19 | 1.50 | Truevision Corp. | 2.50 | 0.28 | 12.7 |
| VSIO | 48.13 | 19.13 | Visio Corp. | 45.50 | 2.25 | 5.2 |
| WALK | 20.44 | 10.50 | Walker Interactive Systems | 19.06 | -0.50 | -2.6 |
| WALL | 29.13 | 11.31 | Wall Data Inc. | 14.63 | -0.13 | -0.8 |
| WANG | 32.25 | 16.00 | Wang Laboratories Inc. (H) | 31.63 | 0.69 | 2.2 |
| **Internet** | | | | | | [illegible] |
| AMZN | 96.75 | 15.75 | Amazon.com (H) | 94.69 | 8.69 | 10.1 |
| AOL | 75.56 | 21.00 | America On-Line (H) | 74.31 | 5.81 | 8.5 |
| ATHM | 38.13 | 16.63 | At Home Corp. | 34.19 | 0.25 | 0.7 |
| EDFY | 22.13 | 8.88 | Edify Corp. | 18.63 | 0.25 | 1.4 |
| XCIT | 59.25 | 7.50 | Excite, Inc. | 56.00 | 6.19 | 12.4 |
| SEEK | 22.88 | 4.38 | Infoseek Corp. | 21.38 | 3.25 | 17.9 |
| LCOS | 60.63 | 11.19 | Lycos Inc. (H) | 59.81 | 15.94 | 36.3 |
| NSCP | 49.50 | 14.88 | Netscape Comm. Corp. | 17.06 | -2.19 | -11.4 |
| NSOL | 40.38 | 11.75 | Network Solution Inc (H) | 39.75 | 9.63 | 32.0 |
| OMKT | 21.38 | 6.50 | Open Market Inc. (H) | 20.25 | 0.75 | 3.8 |
| PEGS | 28.25 | 12.50 | Pegasus Systems (H) | 28.25 | 4.75 | 20.2 |
| PSIX | 12.88 | 4.25 | PSINet (H) | 12.38 | 0.06 | 0.5 |
| QDEK | 3.50 | 1.19 | Quarterdeck Corp. | 1.66 | -0.34 | -17.2 |
| SCUR | 15.25 | 4.75 | Secure Computing Corp. | 13.00 | -0.81 | -5.9 |
| SPYG | 12.00 | 4.06 | Spyglass Inc. | 9.06 | 0.75 | 9.0 |
| YHOO | 104.56 | 16.63 | Yahoo! Inc. (H) | 102.13 | 10.50 | 11.5 |
| **Semiconductors** | | | | | | [illegible] |
| AMD | 45.75 | 17.13 | Advanced Micro Devices | 28.88 | 4.63 | 19.1 |
| ADI | 36.69 | 21.63 | Analog Devices Inc. | 34.56 | 1.00 | 3.0 |
| CRUS | 17.75 | 8.00 | Cirrus Logic | 10.06 | -0.25 | -2.4 |
| CY | 18.94 | 7.38 | Cypress Semiconductor Corp. | 10.06 | 0.19 | 1.9 |
| INTC | 102.00 | 64.13 | Intel Corp. | 76.63 | -2.56 | -3.2 |
| LSCC | 74.50 | 39.75 | Lattice Semiconductor | 51.00 | -2.00 | -3.8 |
| LSI | 46.88 | 18.63 | LSI Logic Corp. | 26.81 | 2.63 | 10.9 |
| MCRL | 46.88 | 13.00 | Micrel Semiconductor Inc. | 39.19 | 3.38 | 9.4 |
| MU | 60.06 | 22.00 | Micron Technology | 31.44 | 2.25 | 7.7 |
| MOT | 90.50 | 52.00 | Motorola Inc. | 60.13 | 2.81 | 4.9 |
| NSM | 42.88 | 19.50 | National Semiconductor | 20.50 | -0.13 | -0.6 |
| RMBS | 86.75 | 26.88 | Rambus Inc | 45.25 | 7.00 | 18.3 |
| TXN | 71.25 | 36.81 | Texas Instruments | 55.88 | 1.31 | 2.4 |
| VLSI | 38.69 | 16.63 | VLSI Technology | 19.75 | 2.25 | 12.9 |
| XLNX | 58.50 | 28.50 | Xilinx | 38.25 | -1.31 | -3.3 |
| **Peripherals and Subsystems** | | | | | | [illegible] |
| ADPT | 54.25 | 19.44 | Adaptec Inc. (L) | 20.25 | -0.56 | -2.7 |
| APCC | 34.38 | 15.25 | American Power Conversion | 30.00 | 1.25 | 4.3 |
| CREAF | 29.38 | 9.13 | Creative Technology Ltd. | 23.13 | -0.50 | -2.1 |
| RACE | 16.75 | 1.44 | Data Race Inc. (L) | 1.69 | -0.56 | -25.0 |
| DTM | 13.13 | 7.88 | Dataram Corp. (H) | 12.63 | 1.25 | 11.0 |
| EMC | 40.50 | 16.19 | EMC Corp. (H) | 38.81 | 1.44 | 3.8 |
| EMLX | 21.25 | 8.00 | Emulex Corp. (L) | 9.38 | 0.75 | 8.7 |
| ESCC | 35.88 | 22.13 | Evans and Sutherland | 29.56 | 0.31 | 1.1 |
| EXBT | 16.50 | 5.63 | Exabyte | 8.88 | 0.19 | 2.2 |
| IISLF | 1.88 | 0.78 | Intelligent Info. Systems (L) | 0.91 | -0.03 | -3.3 |
| IOM | 16.75 | 6.88 | iomega Corp. | 6.88 | -0.06 | -0.9 |
| IPLS | 2.81 | 0.94 | IPL Systems Inc. | 2.00 | 0.06 | 3.2 |
| KMAG | 35.38 | 11.75 | Komag Inc. | 14.31 | -0.50 | -3.4 |
| MTSI | 34.88 | 13.00 | Micro Touch Systems Inc. | 19.75 | 1.75 | 9.7 |
| MTIC | 17.88 | 3.69 | MTI Technology Corp. | 16.63 | 1.00 | 6.4 |
| AQM | 23.06 | 2.25 | QMS Inc. | 4.38 | 0.00 | 0.0 |
| QNTM | 43.25 | 17.75 | Quantum Corp. | 23.00 | 1.19 | 5.4 |
| RDUS | 8.13 | 1.88 | Radius Inc. | 3.13 | 0.25 | 8.7 |
| SEG | 54.25 | 17.75 | Seagate Technology | 26.13 | 0.75 | 3.0 |
| SOS | 14.38 | 5.00 | Storage Computer Corp. | 7.06 | 0.19 | 2.7 |
| STK | 79.38 | 33.25 | Storage Technology (H) | 79.00 | 3.38 | 4.5 |
| TEK | 48.19 | 33.19 | Tektronix Inc. | 43.25 | -1.50 | -3.4 |
| WDC | 54.75 | 14.50 | Western Digital Corp. | 18.63 | 0.63 | 3.5 |
| XRX | 109.69 | 54.75 | Xerox Corp. (H) | 104.69 | 0.50 | 0.5 |
| **Services** | | | | | | [illegible] |
| AMSY | 30.00 | 17.63 | American Mgmt. Systems | 26.38 | -0.75 | -2.8 |
| ANLY | 36.50 | 14.19 | Analysts Int'l | 29.81 | -0.19 | -0.6 |
| AUD | 70.69 | 26.56 | Auto Data Processing | 67.63 | -0.75 | -1.1 |
| CATP | 51.00 | 21.75 | Cambridge Tech. Partners | 51.00 | 1.13 | 2.3 |
| CEN | 57.00 | 29.50 | Ceridian Corp. (H) | 55.38 | 0.75 | 1.4 |
| CDO | 44.13 | 18.38 | Comdisco Inc. | 44.00 | 1.94 | 4.6 |
| CPU | 38.00 | 15.88 | CompUSA Inc. | 20.19 | -5.75 | -22.2 |
| CHRZ | 53.50 | 19.75 | Computer Horizons | 50.75 | 1.25 | 2.5 |
| CSC | 56.75 | 28.94 | Computer Sciences | 54.44 | -0.25 | -0.5 |
| TSK | 49.38 | 16.63 | Computer Task Group | 38.50 | -4.06 | -9.5 |
| EGGS | 12.75 | 3.63 | Egghead Discount Software | 10.44 | -0.06 | -0.6 |
| EDS | 50.88 | 29.56 | Electronic Data Systems Corp. | 45.31 | -1.19 | -2.6 |
| ICO | 39.63 | 19.75 | Inacom Corp. | 27.38 | 0.25 | 0.9 |
| INEL | 7.50 | 2.25 | Intelligent Electronics | 7.34 | 0.16 | 2.2 |
| KEA | 57.50 | 15.06 | Keane Inc. (H) | 56.25 | 4.50 | 8.7 |
| MICA | 29.75 | 10.06 | Microage Inc. | 14.63 | 2.19 | 17.6 |
| PAYX | 59.75 | 25.63 | Paychex | 58.25 | 0.63 | 1.1 |
| PMS | 80.69 | 42.63 | Policy Management Sys. (H) | 79.38 | 0.44 | 0.6 |
| REY | 25.00 | 13.75 | Reynolds and Reynolds | 22.13 | 0.56 | 2.6 |
| SCBI | 26.38 | 10.69 | SCB Computer Tech. Inc. (H) | 26.38 | 4.94 | 23.0 |
| SEIC | 71.00 | 18.75 | SEI Corp. (H) | 69.44 | 4.44 | 6.8 |
| SMS | 82.69 | 36.75 | Shared Medical Systems (H) | 81.25 | 2.69 | 3.4 |
| SSPE | 24.25 | 10.00 | Software Spectrum Inc. | 22.38 | -0.13 | -0.6 |
| SDS | 38.63 | 20.75 | Sungard Data Systems (H) | 38.38 | 4.94 | 14.8 |
| VST | 17.25 | 6.50 | VanStar Corp. | 12.38 | -0.25 | -2.0 |

KEY: (H) = New annual high reached in period (L) = New annual low reached in period

Copyright Nordby International, Inc., Boulder, Colo. (nordby.com)

This information is based on sources believed to be reliable, and while extensive efforts are made to assure its accuracy, no guarantees can be made. Nordby International and *Computerworld* assume no liability for inaccuracies. For information on Nordby's customized financial research services, call (303) 938-1877.

# How to contact Computerworld

## TELEPHONE/FAX

**Main phone number** ................(508) 879-0700
All editors unless otherwise noted below
**Main fax number** ........................(508) 875-8931
**24-hour news tip line**.................(508) 820-8555

## E-MAIL

Our Web address is www.computerworld.com. All staff members can be reached via E-mail on the Internet using the form:

firstname_lastname@cw.com.

All IDG News Service correspondents can be reached using the form:

firstname_lastname@idg.com.

## LETTERS TO THE EDITOR

Letters to the editor are welcome and should be sent to:

letters@cw.com.

Please include your address and telephone number.

## MAIL ADDRESS

PO Box 9171, 500 Old Connecticut Path,
Framingham, Mass. 01701

## SUBSCRIPTIONS/BACK ISSUES

**Phone** ........................................(800) 552-4431
**E-mail** ...............................circulation@cw.com
**Back Issues**...............................(508) 820-8129

## REPRINTS/PERMISSIONS

**Phone**..................Michelle Olk, (800) 217-7874

## CONTACTING CW EDITORS

We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

| | |
|---|---|
| **Editor** | Paul Gillin (508) 620-7724 |
| **Executive Editor** | Maryfran Johnson (508) 820-8179 |

### Department Editors/News

| | |
|---|---|
| **News Editor** | Patricia Keefe (508) 820-8183 |
| **Sections Editor** | Kevin Fogarty (508) 820-8246 |
| **Assistant News Editor** | Mitch Betts (202) 347-6718 |
| **Assistant Sections Editor** | Michael Goldberg (508) 620-7789 |
| **Online Editor** | Johanna Ambrosio (508) 820-8553 |
| **Online News Editor** | Judith H. Bernstein (516) 266-2863 |
| **Industry Editor** | Joe Maglitta (508) 820-8223 |

### National Correspondent

| | |
|---|---|
| **IT services, systems integration, outsourcing** | Julia King (610) 532-7599 |

### Senior Editors/News

| | |
|---|---|
| **Groupware, E-mail, messaging** | Barb Cole-Gomolski (760) 728-8858 |
| **Operating systems, security** | Laura DiDio (508) 820-8182 |
| **Network/systems management** | Patrick Dryden (817) 924-5485 |
| **Application development, middleware** | Sharon Gaudin (508) 820-8122 |
| **IS management, year 2000, financial services** | Thomas Hoffman (914) 988-9630 |
| **E-commerce, Internet issues** | Sharon Machlis (508) 820-8231 |
| **Investigative reports** | Kim S. Nash (773) 871-3035 |
| **Labor issues, IS careers** | Tim Ouellette (508) 820-8215 |
| **Intranets, extranets** | Carol Sliwa (508) 628-4731 |
| **Databases** | Craig Stedman (508) 820-8120 |
| **Midrange hardware, Unix, mainframes** | Jaikumar Vijayan (508) 820-8220 |
| **Internetworking** | Bob Wallace (508) 820-8214 |

### Senior Writers/News

| | |
|---|---|
| **@Computerworld** | Stewart Deck (508) 820-8155 |
| **Mobile computing, help desk** | Kim Girard (650) 548-5515 |
| **PCs, servers, net computers, Windows** | April Jacobs (508) 820-8121 |
| **@Computerworld** | Patrick Thibodeau (508) 820-8143 |

### Staff Writers/News

| | |
|---|---|
| **New products, multimedia, storage** | Nancy Dillon (415) 548-5538 |
| **Telecommunications, federal government** | Matt Hamblen (508) 820-8567 |
| **Client/server software, Unix applications** | Randy Weston (508) 628-4869 |
| **@Computerworld,** | Tom Diederich (650) 548-5581 |

### Opinions

| | |
|---|---|
| **Columns Editor** | Steve Ulfelder (508) 620-7745 |
| **Staff Columnist** | Frank Hayes (503) 252-0100 |

### Department Editors/Features

| | |
|---|---|
| **Managing** | Allan E. Alter (508) 620-7714 |
| **Technology reviews/ Review Center** | James Connolly (508) 820-8144 |

### Senior Editors/Features

| | |
|---|---|
| **Editor at large** | Gary H. Anthes (202) 347-0134 |
| **Features writer** | Kevin Burden (508) 620-7717 |
| **Review Center** | Cathleen Gagne (508) 620-7729 |
| **QuickStudy** | Stefanie McCann (508) 820-8274 |
| **Management** | Kathleen Melymuka (508) 628-4931 |
| **In Depth** | Steve Ulfelder (508) 620-7745 |
| **IT Careers** | David B. Weldon (508) 820-8166 |

### Associate Editors/Features

| | |
|---|---|
| **Review Center** | Amy Malloy (508) 620-7754 |
| **Managing** | Rick Saia (508) 820-8118 |

### Research

Bob Fink, senior research manager (508) 820-8116; Laura Hunt, research analyst; Keith Shaw, graphics coordinator; Mari Keefe, online researcher.

### Copy Desk

Ellen Fanning, managing editor (508) 820-8174; Roberta Fusaro, assistant managing editor; Jamie Eckle, David Ramel, senior copy editors; Michelle Davidson, senior production copy editor; Deborah Brown, Pat Hyde, Adam Parez, Monica Sambataro, copy editors; Jeremy Selwyn, online copy editor.

### Graphic Design

Tom Monahan, design director (508) 820-8218; Janell Genovese, associate art director/features; Mitchell J. Hayes, associate art director/news; David Waugh, associate art director/online; Nancy Kowal, senior graphic designer; Carol Lieb, photo researcher/editor; Alice Goldberg-FitzHugh, Amira Harari, April O'Connor, graphic designers; Rich Tennant, John Klossner, cartoonists.

### Administrative Support

Linda Gorgone, office manager (ext. 8176); Connie Brown (ext. 8178), Lorraine Witzell (ext. 8139); Beliza Veras-Moriarty (ext. 8172); Chris Flanagan, editorial assistants, (415) 548-5563.

### Computerworld Magazines Group

(Includes Premier 100, Campus Edition, Best Places to Work, Leadership Series, Intranet Series, Emmerce and Health Care Journal.)
Alan Alper, editor (508) 820-8115; Mary Brandel, executive editor; Anne McCrory, Catherine McCrorey, Joyce Chutchian-Ferranti, managing editors; Kimberlee A. Smith, assistant managing editor and online coordinator; Mary Beth Welch, art director.

---

## @COMPUTERWORLD

@Computerworld is our World Wide Web site. On it, we publish daily news and feature stories that supplement our print coverage. We also have special audio features, such as interviews with industry notables, and the @Computerworld Minute, an audio version of the day's top news.

A few times each week, we also have Links listings. These are resources related to online and/or print stories. We also have polls and forums that you must register for to access. The rest of the site is accessible without registering.
Contact: Johanna Ambrosio, Online Editor, (508) 820-8553 or johanna_ambrosio@cw.com.

# Companies in this issue

*Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.*

3Com Corp. ......6
Aberdeen Group, Inc. ......57
AccelGraphics, Inc ......61
Advanced Manufacturing Research, Inc ......24,55
Aetna U.S. Healthcare ......65
Alabama Power ......16
Allegiance Healthcare Corp. ......49
Alliance for Converging Technologies ......34
Amazon.com ......76
America Online, Inc. ......98,100
American Society of Industrial Security ......80
Ameron International Corp. ......39
Andersen Consulting ......34
Angoss International, Ltd. ......55
Animation House, Inc. ......20
Apex Global Internet Services ......6
Association of Information Technology Professionals ......39
AT&T Corp. ......1,100,12,43
Automotive Industry Action Group....70
BancTec, Inc. ......39
Barnes and Noble Online ......76
Bellcore, Inc ......39
Beverage Marketing Corp ......1
Bluestone Software, Inc ......80
Boral Bricks, Inc. ......24
Borland International, Inc ......76
British United Provident Association ......55
Brooklyn Union Gas ......65
Brother International USA ......24
Cabletron Systems, Inc. ......3
California Independent System Operator ......14
California Power Exchange Corp. ......14
Cambridge Technology Partners, Inc. 80
Candle Corp. ......12
Canon Computer Systems, Inc. ......39
Case Corp ......43
CBS Corp. ......98
Center for Democracy and Technology ......43
Chevron Information Technology Co. 49
Chicago Board of Trade ......14
Chrysler Corp. ......70
Cisco Systems, Inc. ......39
Citrix Systems, Inc ......49
Coca-Cola Co. ......1
Compaq Computer Corp. ......12,16,39,57
CompUSA ......1
Computer Associates International, Inc. ......1,49
Computer Literacy Bookshops and Online, Inc. ......76
Computer Sciences Corp. ......1,4,39,
Concentric Network Corp. ......49
Concord Communications, Inc. ......28
Connected Corp. ......57
Covad Communications Co. ......49
Cray Research, Inc. ......20
Credit Suisse First Boston ......24
Cutter Consortium ......43,70
Cyber Promotions, Inc. ......6
D. H. Brown Associates, Inc. ......20
D2K, Inc ......68
Darwin Keyboards Ltd ......102
Data Warehousing Institute ......65
DataMind Corp. ......55
Datasage, Inc. ......55
Dayton Hudson Corp. ......1
DecisionOne Corp. ......39
Dell Computer Corp. ......16
Deloitte & Touche LLP ......57
Dep Corp. ......70
Desktalk Systems, Inc ......28
Deutsche Morgan Grenfell ......70
Digital Equipment Corp. ......1,12
Direct Marketing Association ......6
Drummond Group ......16
EarthLink Network, Inc ......6
Econometrics, Inc. ......76
EDS ......34
Electronic Data Systems Corp. ......4
Employers' Medical Network, Inc. ......49
En-Cyc ......55
Epiphany ......14
Ernst & Young LLP ......39,82
Extreme Networks, Inc. ......24
Farmland Industries, Inc ......39
FBI ......43
Fidelity Investments ......1
Financial Executives Institute ......39
First Union Corp. ......76
Fogelman Properties, Inc ......98
Forrester Research, Inc ......43,75
Frito-Lay, Inc ......1
Fujitsu Ltd. ......1
Gartner Group, Inc. ...1,14,2955,57,65,70
Gateway 2000, Inc. ......16
GATX Capital ......8
GE Capital Services ......57
General Electric Co. ......57
General Motors Corp. ......4
Giga Information Group ......75
GTE Corp ......57
Guide, Inc. ......57
H & R Block, Inc. ......24
Haworth, Inc. ......55
Hewlett-Packard Co. ......1,20,39,43,49
Hot Jobs, Inc. ......45
Howard Rubin Associates ......70
Hurwitz Group, Inc ......49
IBM ......1,10,16,34,3943,55,57,65,76,80
ICN Pharmaceuticals, Inc ......100
Informatica Corp. ......68
Information Management Forum ...8,70
Intel Corp ......16,20,45,49,57,61
Interlogue Communications Corp. ......45
Internal Revenue Service ......12
International Data Corp. ....1,20,55,57,76
International Network Services, Inc...28
Intersolv, Inc. ......79
Intrusion Detection, Inc. ......49
J&R Music and Computer World, Inc. ......70
J. Crew Group, Inc. ......43
John Costanza Institute of Technology, Inc. ......24
Johnson & Johnson ......16
Junglee Corp. ......14
Kaspia Systems, Inc ......28
Key Recovery Alliance ......43
Kokopelli New Media ......43
Kramer, Levin, Naftalis & Frankel ......39
Lanier Worldwide ......6
Lared Group, ......39
Lockheed Martin Corp. ......8
Lois Zells & Associates, Inc. ......70
Longs Drug Stores, Inc. ......1
Lotus Computer Corp. ......34
Luckman Interactive, Inc. ......45
Maersk, Inc ......100
Mag Portable Technologies, Inc ......61
MarketFirst ......14
MCI Communications Corp. ......14,100
Media One Express ......28
Mercedes-Benz ......76
Meta Group, Inc. ......28,29,43,49,65,82
Microsoft Corp ......1,10,12,39,49,57, ......68,75,76,70
Miniature Precision Bearings ......70
MIT ......1
MIT Media Lab ......33
MOAI Technologies, Inc ......45
Monorail Computer Corp. ......61
Monsanto Corp ......3,39
Mott's North America, Inc. ......24
MPB Corp. ......70
N.E.T. ......14
N2K, Inc. ......98
Nabisco Foods, Inc. ......57
NASA ......76
Nasdaq Stock Market ......14
National Collegiate Athletic Association ......98
National Security Agency ......43
NationsBanc Montgomery Securities...1
Nationwide Financial Services ......70
NavStor ......57
NCR Corp. ......12,55,57,61
Netcom On-Line Communication Services, Inc. ......6
NetDynamics, Inc. ......80
NetOps Corp. ......28
NetReference, Inc ......24
Netscape Communications Corp. ......12
Network Associates, Inc. ......43
New Line Cinema ......102
New Zealand Ministry of Health ......43
Nibco, Inc ......8,55
Norand Mobile Systems ......1
NorthPoint Communications, Inc. 16,49
Northrop Grumman Corp. ......16
NovaStor Corp. ......57
Novell, Inc. ......24,34
Ocean Spray Cranberries, Inc. ......49
One Source Information Services, Inc. ......79
OneSystem LLC ......39
Onyx Software Corp. ......14
Oracle Corp. ......1,45,55,75,80
Ovum Ltd. ......68
PaineWebber, Inc ......98
Palo Alto Research Center ......34
Pediatric Physicians Alliance ......49
Pediatrics Specialists ......49
PeopleSoft Corp. ......1,24,49,55,80
Pepsico, Inc ......1
Platinum Technology, Inc. ......1
Portable Software Corp. ......43
Price Waterhouse LLP ......65,82
Proactive Networks, Inc ......28
ProCom Technologies, Inc. ......61
Progress Software Corp. ......75,80
PSW Technologies, Inc ......39
Quarterdeck Corp. ......55
R. W. Pressprich & Co. ......14
Rachel Foerster & Associates ......16
Rand Financial Services, Inc. ......1
Red Storm Entertainment, Inc ......10
Renaissance Worldwide, Inc ......80
Roffman Miller Associates ......1
Rubric, Inc ......14
Safeguard Interactive, Inc. ......57
Sagent Technology, Inc. ......68
Sales Automation Association ......6
SAP AG ......8,12,14,24,39,49,55,
SAP America, Inc. ......39,80
Saratoga Systems ......55
SAS Institute, Inc. ......65
Seagate Software ......65
Security Dynamics, Inc ......49
SilverStream Software, Inc ......75,80
Sitara Networks, Inc. ......43
Software Tool & Die ......6
Solectron Corp ......28
Sony Corp. ......61
Sony Pictures Entertainment ......55
Southern Co. ......16
Sportsline USA, Inc ......98
Sprint Corp. ......100
SPSS, Inc ......55
SRA International, Inc. ......55
Stac, Inc. ......57
Stanford University ......80
StarBase Corp ......79
State of South Dakota ......3
State Street Bank ......28
Storage Dimensions ......61
Success Automation Software ......6
Sun Microsystems, Inc. ....1,10,20,76,80
Sybase Corp ......24,43,65,75
T. Rowe Price Investment Technologies, Inc. ......79
Tactical Strategy Group, Inc ......33,70
Tandberg Data, Inc ......61
Tandem Computers, Inc ......14
TBI, Inc. ......4
TEGAM International LLC ......49
Tektronix, Inc ......49
The Boeing Co. ......57
The Chase Manhattan Bank Corp. ......16
The Partners ......84
The Prudential Insurance Company of America ......79
The Reynolds and Reynolds Co. ......79
The Sports Network ......43
The Standish Group International, Inc. ......76
Thinking Machines Corp. ......55
Timevision, Inc ......45
Tivoli Systems, Inc ......49
Toshiba America Information Systems, Inc ......57
Trans World Airlines ......57
Transcrypt International, Inc ......39
Trek Bicycle Corp. ...... 8
Trenam Kemker ......39
Trilogy, Inc. ......55
U.S. Air Force ......79
U.S. Department of the Treasury .... ..12
U.S. Quality Algorithms, Inc ......65
United Guaranty Corp. ......16
University of Maryland Medical System ...... 3
US West, Inc. ......1
Vantive Corp. ......6
Visio Corp. ......14
Visix Software, Inc. ......39
Vois Corp. ......49
Volpe Brown Whelan & Co. LLC ......98
WarRoom Research, Inc. ... ......80
WebMate Technologies, Inc ......39
Weyerhauser Co. ......16
William Greene Co. ......49
Wohl Associates ...... 10
Xerox Corp. ......34,65
Yago Systems, Inc. ......3
Yahoo, Inc. ......98
Yankee Energy System, Inc ......70
Zona Research, Inc. ......43,80

# AOL for business? Users say no

*▸ New VPN service must overcome provider's reputation for unreliability*

*By Matt Hamblen*

AMERICA ONLINE, INC. last week announced a virtual private network (VPN) service for corporations, but several network managers laughed in its face. The big concern: reliability.

"If I were banking my company on a VPN service, I wouldn't go with AOL," said Mike McClure, network administrator at ICN Pharmaceuticals, Inc. in Costa Mesa, Calif. "They can't handle my mom's home online service, so I'm not sure I'd want my company with them."

McClure and four other network managers interviewed said they doubt that Dulles, Va.-based America Online has overcome its well-publicized problems with network access for millions of consumers early last year.

A VPN carries encrypted traffic over the Internet or an Internet service provider's backbone.

"We're interested in establishing a VPN . . . but I'm not sure I'm interested in getting in bed with AOL," said Chris Ruhalter, sales force automation manager at Maersk, Inc., a shipping company in Madison, N.J.

In response, an America Online executive defended the company's network, which received a $700 million upgrade in the past year, and emphasized its wide availability.

The AOL network, based on pieces of three Internet backbone suppliers, supports 675,000 users simultaneously and has 1,500 worldwide locations where remote users can make a local call to get in.

"If a CIO at a company realizes the size of our network, he'll be interested," said David Gang, America Online's senior vice president of strategic development.

Two other corporate managers said they are willing to give America Online the chance to pitch the new service, alongside more established VPN service providers such as AT&T Corp. in Basking Ridge, N.J., and MCI Communications Corp. in Washington.

"We'd listen to AOL, but it would be a tough sell," said Bob Rosborough, operations director for consumer imaging services at Eastman Kodak Co. ☐

JOHN RAE

**◂Maersk's Chris Ruhalter: "We're interested in establishing a VPN . . . but I'm not sure I'm interested in getting in bed with AOL"**

## Pricing out your options

**AOL officials said the average cost of the AOL Enterprise VPN service will be $1.75 to $2 per hour per user. That pricing is based on a customer with 3,000 to 5,000 users, each using the VPN 25 hours per month.**

**AOL's pricing is in the same ballpark as three major VPN carriers, although all three said they would negotiate with customers to match or beat their competitors. AT&T's average charge is $1.95 per hour, although it offers one VPN package for $99.95 per month per user for 60 hours of service, which translates into $1.66 an hour.**

**MCI said its customers should budget $2 per hour per user for VPN service, while Sprint Corp. said it charges $1.90 per hour, subject to negotiation. — Matt Hamblen**

---

# Expertise tops users' service criteria

CONTINUED FROM PAGE 1

trast, doesn't even make the wish list. Neither does one-stop shopping, which users now seem to regard as some long-ago pipe dream.

Still other users are fed up with doing it all themselves and are turning to vendors out of exasperation as much as for expertise.

"We're seeing clients become impatient and somewhat averse to the true cost of a best-of-breed solution," said John Bace, an analyst at Gartner Group, Inc. in Stamford, Conn. "So they're leading with a particular platform, like [Sun Microsystems, Inc.] or [Hewlett-Packard Co.], then looking to [integrators] with experience and a track record of having done the same thing somewhere else so the bugs are worked out on someone else's nickel." That is a real sea change from even a few years ago, Bace added.

Similarly, 46% of 103 users polled last month by *Computerworld* said close ties to a hardware or software vendor made "no difference" in their selection of a services provider.

"Two years ago, being an objective, independent third party was the value proposition of many service providers," said Susan Tan, an analyst at IDC. "But with the proliferation of products in the marketplace, more users realize that objectivity is just not possible anymore."

**FEWER IS BETTER**

Instead, integrators are aligning themselves with a handful of tools and software products from one or two vendors and specializing in implementing those products at customer sites.

"It's foolish to say there isn't a bias, but whether that bias is material is dependent on whether you like an integrator's tools on their own merit," said Brian Kilcourse, chief information officer at Longs Drug Stores, Inc. in Walnut Creek, Calif.

But relying on the same vendor for both consulting services and products is getting far too close for comfort, which is one of the prime reasons Kilcourse had reservations about Computer Associates International, Inc.'s $9 billion buyout bid for Computer Sciences Corp. [CW, Feb. 16].

San Francisco-based NationsBanc Montgomery Securities tapped Digital Equipment Corp.'s services unit specifically for its track record on Windows and NT integration projects.

"Whenever we go outside for support, our primary criterion is demonstrated expertise," said Larry Sikon, director of technical services. Still, he isn't naive about the pitfalls of hiring a services company that also sells hardware.

"You understand from the beginning that they probably will have a preference for their own things, but if all they did was push Digital hardware, we wouldn't use them," Sikon said. The company doesn't do that, which represents a major change from even a few years ago, he added.

Boston-based Fidelity Investments also turned to its software vendor for implementation services and has never looked back.

"We've hired Microsoft to help us with some of the latest Web projects, and I think it was the smartest thing we could have done because nobody knew this stuff, and half of it wasn't even documented," said Alan Delgadillo, vice president of brokerage information systems.

"I'm a firm believer of having vendor representation [on projects] because it's good to have someone on shore as well as in the ship," he added.

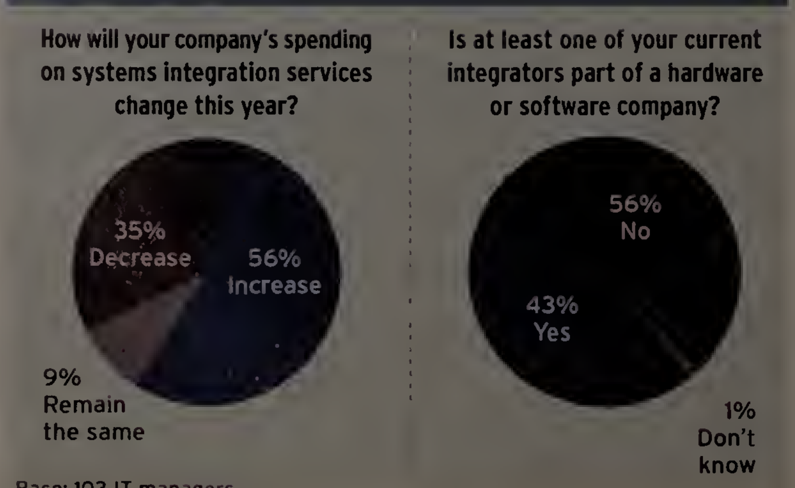
Still, users said that for certain projects they would steer clear of hiring a services company with close ties to a hardware or software vendor.

For example, when Maine Employees Mutual Insurance Co. in Portland, Maine, hired an independent systems integrator to study the insurer's claims process and recommend a new imaging system, "we were rewarded with a very nice study that said we shouldn't do anything other than make a few workflow improvements," CIO Gary Baxter said.

"We felt any hardware-specific services vendor would be pushing their solutions," he said.

On the other hand, Baxter said, whenever services involving the company's IBM AS/400 are required, "we absolutely require it to be an IBM organization that comes in." ☐

**DESTINATION INTEGRATION**


How will your company's spending on systems integration services change this year?

Is at least one of your current integrators part of a hardware or software company?

Base: 103 IT managers

Source: Computerworld Information Management Group, Framingham, Mass.

## Top criteria for choosing a systems integrator

1. Quality of service
2. Experience
3. Reputation for completing projects on schedule
4. Ease of doing business
5. Overall reputation

Base: 103 IT managers

Source: Computerworld Information Management Group, Framingham, Mass.

# Manageability over upgrades

CONTINUED FROM PAGE 1

users should focus on more important issues such as managing their systems more efficiently, analysts said.

"For the next few years, users have to get off the treadmill, take the opportunity to ride the price curve down and apply their savings to support and manageability," Goodhue said in an interview at Gartner's Total Cost of Ownership Conference, held here last week.

Goodhue said there won't be any major operating system upgrades, at least until Windows NT 5.0 appears next year, that justify spending the money on a 333-MHz Pentium II-based machine when a 233- or 266-MHz machine will do.

He added that popular software such as Microsoft Corp.'s Office 97 and Windows 95 run very well on PCs equipped with a 233-MHz processor and 48M bytes of RAM, the configuration of an average desktop. Giving users more will mean spending money on an overpowered and overpriced machine.

### TOO MUCH

"We have been finding that we don't need all that we typically provide for our users," said Donna Adrain-Falzone, program manager for benchmarking at Denver-based US West, Inc. She said some users rely on only parts of suite applications or don't use suites at all. That has prompted the company to more carefully consider what to give them.

Adrain-Falzone said US West still will give its knowledge workers — those who rely heavily on their PCs to analyze and process information — the equipment and applications they need. But other workers will get only what it takes to get the job done.

The savings users can realize by resisting unnecessary systems upgrades are real. For example, besides the cost of the physical system, Gartner estimates that redeploying a PC can cost between $300 and $1,000. And while high-end PCs usually debut at about $3,000, many Pentium II systems in the 233- and 266-MHz category can be bought for half that price.

"We have hit the limit in terms of hardware, and we know we don't need to go up anymore, or at least not for a while," said an information systems manager at a major U.S. petroleum company who requested anonymity.

That company's average desktop computer is a 233-MHz Pentium II with 64M bytes of RAM, running Office 97 and Windows 95 — a good configuration through 2000, according to Gartner Group.

No one is predicting that PC sales will decline overall, but some observers have noted that users are closely watching price points and life cycles. PC vendors are committed to the Pentium II platform but also recognize that users want more consistency and longevity in their PC platforms.

"Average PC prices are falling and have been for a while, and that is an indication that things have slowed down in terms of customers moving to higher platforms," said Michael Sievert, manager of worldwide strategy at IBM.

To give customers a more stable offering through the end of this year, the company plans to offer the 300GL line, which features Pentium processors with MMX technology in speeds of 200- and 233-MHz.

Some users wonder how they will hold the line on PC upgrades when most vendors don't keep their machines stoked for more than one year.

"It's going to be very difficult to stop the upgrade cycle when the PC makers are constantly putting out [higher-speed] machines and the channels quickly empty of the older ones," said Clement Contestable, a hardware and software acquisitions manager at AT&T Corp. in Basking Ridge, N.J. ☐

## Doubling up

**Moore's Law is that the pace of microchip technology change is such that the amount of data storage a microchip can hold doubles every 12 to 18 months. In 1965 when preparing a talk, Gordon Moore noticed that up to that time microchip capacity seemed to double each year. Because the pace of change has slowed down a bit over the past few years, the definition has changed (with Gordon Moore's approval) to reflect that the doubling occurs only every 18 months.**

**For more information, visit *http://whatis.com/mooresla.htm.***

# PepsiCo, Frito-Lay

CONTINUED FROM PAGE 1

across branded product lines, for example, PepsiCo and Frito-Lay could offer merchandising incentives and better service to their largest joint customers.

Both companies already jointly market to consumers by offering savings coupons for low-fat Frito snack foods to those who buy Diet Pepsi, for example.

On the IT front, "the synergies could be as simple as common hardware and software platforms, and as complete as one common application for category management or pricing," Schuckenbrock said last week in an exclusive interview with *Computerworld.*

Now, for example, Frito-Lay's salespeople and other employees in the field use Fujitsu Ltd. PCs while PepsiCo employees use PCs from Norand Mobile Systems.

On the other hand, Schuckenbrock said, both Frito-Lay and PepsiCo are implementing Oracle Corp.'s enterprise applications for the consumer packaged goods industry, which represents a significant start on a common enterprise software platform.

New technology initiatives in the area of efficient consumer response — including data scanning, bar-coding and electronic data interchange — provide other prime opportunities for joint systems development, he said.

"Basically, we have two organizations that are going to try to work closely together and for the first time have one leader responsible to make that happen," he said.

Schuckenbrock said neither PepsiCo nor Frito-Lay plans any IS staff cuts as part of the overhaul. But he said he does plan to name two additional vice presidents of technology within the next 60 to 90 days. His new title is senior vice president of information technology and CIO of PepsiCo. He reports directly to PepsiCo Chief Financial Officer Michael White.

Ken Harris, former vice president of IT at PepsiCola North America, left the company about 10 days ago and is joining Nike in a similar position, company spokespeople said. PepsiCo's previous top IT executive, Allan Deering, will concentrate on corporate IT issues and will report to Schuckenbrock.

GIORGIO PALMISANO

**PepsiCo's Steve Schuckenbrock: "The synergies could be as simple as common hardware and software platforms"**

Installing Schuckenbrock as CIO is "a super move," said Honorio Padron, CIO at CompUSA in Dallas and former CIO of Pepsi's restaurant division.

Padron said Schuckenbrock has helped Frito-Lay continue to be an innovative user of IT, including enhancing its handheld computer technologies so salespeople in the field can better track inventories and communicate with retailers.

"When it comes to using technology strategically, Frito-Lay takes a backseat to no one," said Marvin Roffman, president of Roffman Miller Associates, a Philadelphia-based investment adviser. "Just when you think [Frito-Lay] has squeezed the last nickel out of productivity, they do something to [further] improve it."

### CONSOLIDATION PICKS UP

Minneapolis-based Dayton Hudson Corp. also is consolidating IS operations for its Target and Mervyn's department stores to slash costs and gain efficiencies, Padron said.

"I think businesses [are recognizing] that it's an 80/20 game: 80% of IT between organizations are common systems," he said.

But Roffman and other analysts said they aren't sure whether PepsiCo's IS consolidation with Frito-Lay will affect the cola wars. Coca-Cola Co.'s share of the U.S. soft-drink market climbed from 43.4% in 1996 to 44.1% last year.

PepsiCo's share slid one-tenth of a percent to 30.7%, said Gary Hemphill, a vice president at Beverage Marketing Corp., a New York-based beverage industry consulting firm.

PepsiCo's IS consolidation will help the company reduce the cost of its products on supermarket shelves, Roffman said. "But as long as there's a Pepsi and a Coke, there's always going to be a price war," he added. ☐

---

Periodical postage paid at Framingham, Mass., and other mailing offices. Posted under Canadian International Publication agreement #0385697. Computerworld (ISSN 0010-4841) is published weekly: except a single combined issue for the last two weeks in December by Computerworld, Inc., 500 Old Connecticut Path, Box 9171, Framingham, Mass. 01701-9171. Copyright 1997 by Computerworld, Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased from the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by Computerworld, Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress St., Salem, Mass. 01970. Reprints (minimum 100 copies) and permission to reprint may be purchased from Michelle Olk, Computerworld Reprints, c/o Reprint Services, 315 Fifth Ave. Northwest, St. Paul, Minn. 55112, (800) 217-7874. Fax: (612) 633-1862. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4 a copy: U.S. — $48 a year; Canada — $110 a year; Central & So. America — $150 (surface) a year; Europe — $295 a year; all other countries — $295 a year. Subscriptions call toll free (800) 552-4431. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, Box 2044, Marion, Ohio 43305.

ABC ABP

The Back Page

# alt.cw

Dispatches & images from the fringes of the electronic frontier

## Digital archives

### 20 YEARS AGO
(APRIL 1978)

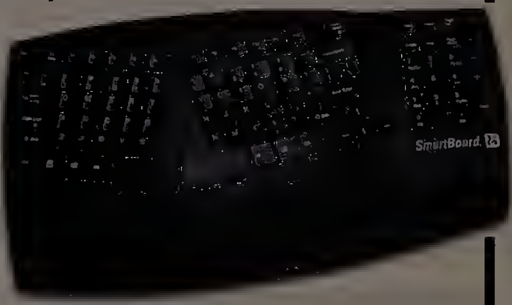
- **The prosecution rests** its case in the **IBM antitrust trial** after nearly three years in court. The government had presented 51 witnesses, 76 depositions and 3,044 exhibits. **IBM begins its defense argument.**

### 10 YEARS AGO
(APRIL 1988)

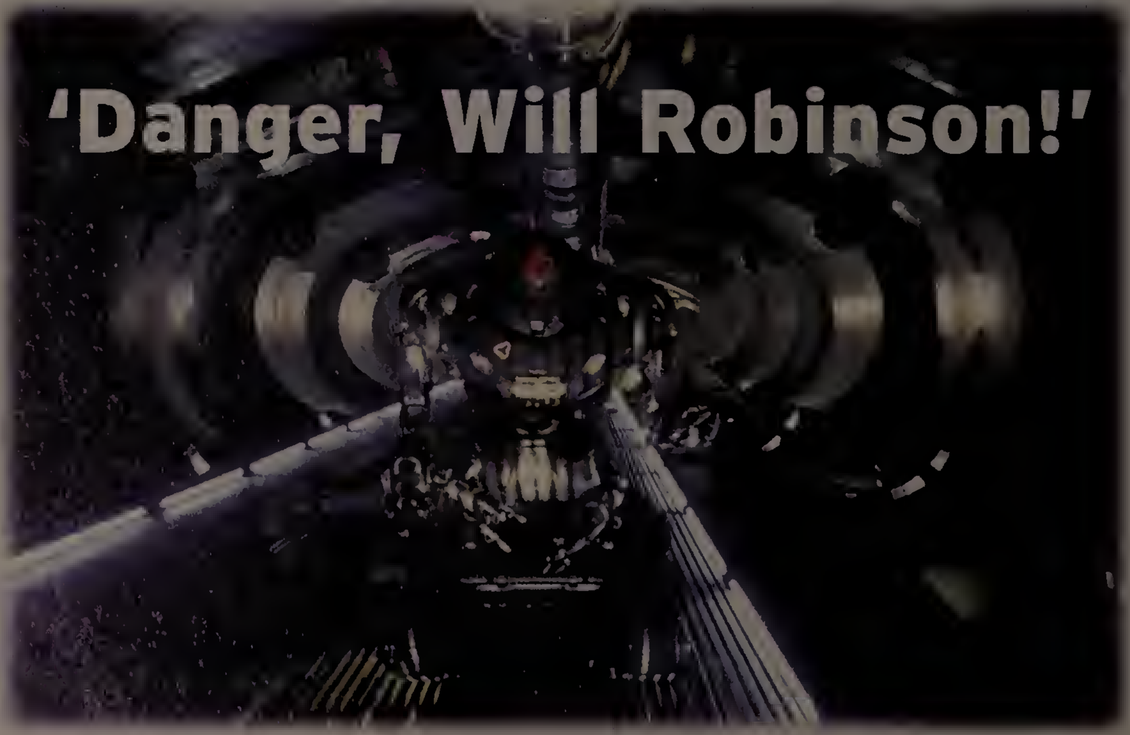
- **IBM lets Tandy, Dell** and other PC makers **clone** its year-old PS/2 line.
- **Intel introduces** the **25-MHz 80386-DX** microprocessor.
- **IBM leaves the photocopier business** and decides to sell its minority stake in MCI. **IBM invests in Metaphor Computer Systems** to get Metaphor's data analysis software and graphical user interface.
- Three weeks after **Apple Computer sued Microsoft** for allegedly copying the **Macintosh interface,** Microsoft files a countersuit claiming it had a licensing deal with Apple. Microsoft also charges Apple with slander.

## THE SMARTER KEYBOARD

**Split keyboards are easy on the wrists. But what about little fingers that have to stretch so far? The SmartBoard from Darwin Keyboards in San Francisco makes the outside letter keys – such as Q, W, O and P – larger and easier to reach. SmartBoard's fan-shaped layout has been endorsed by the world's fastest typist, Greg Arakelian.**



## 'Danger, Will Robinson!'



JACK ENGLISH/NEW LINE CINEMA

Hollywood's remake of the TV series *Lost in Space* debuts this week with a menacing industrial robot instead of the campy, arm-flailing cyborg of the 1960s. To promote the movie, New Line Cinema is deploying multimedia kiosks – with Java applets and video clips – inside replicas of the 8-foot movie robot. The robot kiosks, first seen at Sun's JavaOne conference, will appear at film premieres and festivals.

# Inside Lines

## Bugged by the millennium

The need to get serious about marketing is no match for the year 2000 crisis. At least that's the case at Bay State Gas, a $475 million utility in Westboro, Mass. T. J. Aruffo was hired as CIO there last fall because of his experience with developing customer service and call center applications — key skills for a onetime monopoly that now faces a new era of deregulation. "I'm spending 90% of my time on the year 2000," Aruffo said with a sigh.

## PR maven, off-duty poet

If PeopleSoft's press releases sound poetic, it may have something to do with Kit Robinson, the Pleasanton, Calif., company's communications director. His off-duty pursuits led to his publishing more than a dozen poetry books. Robinson recently took time after a PeopleSoft event in New York to trek down to the Village for a reading. His books include "Balance Sheet" (not an ode to ERP financial modules) and "Ice Cubes" (nothing to do with Internet commerce and OLAP tools).

## Party on, coders

Party invitations? Who needs them. Posting information on its *www.mozilla.org* site, Netscape drew about 3,500 to its source code release party Wednesday night at San Francisco's Sound Factory. Entertainment for the geekfest? There was a band, DJs and digital video screens that projected a loop of source code and the Quake video game.

## He's baaacck!

Sources at Cabletron said former president and CEO Bob Levine is back in "an unofficial capacity to help out with sales" at the beleaguered Rochester, N.H., company. Levine's reappearance coincides with last week's return of co-founder Craig Benson as CEO, following the resignation of Don Reed. "Bob and Craig have been and continue to be close friends, and Bob was great with the sales force. There's no doubt he's needed now," said a source close to the company who requested anonymity.

## Sometimes it takes more than a village . . .

Andersen Consulting in Chicago intends to interview the equivalent population of a small U.S. city to find the right 15,000 consultants it plans to hire this year. To find those qualified workers, Andersen figures it has to screen 200,000 candidates and then interview 125,000 of those people. Recruiting employees is everybody's job at the consulting giant, an Andersen executive said.

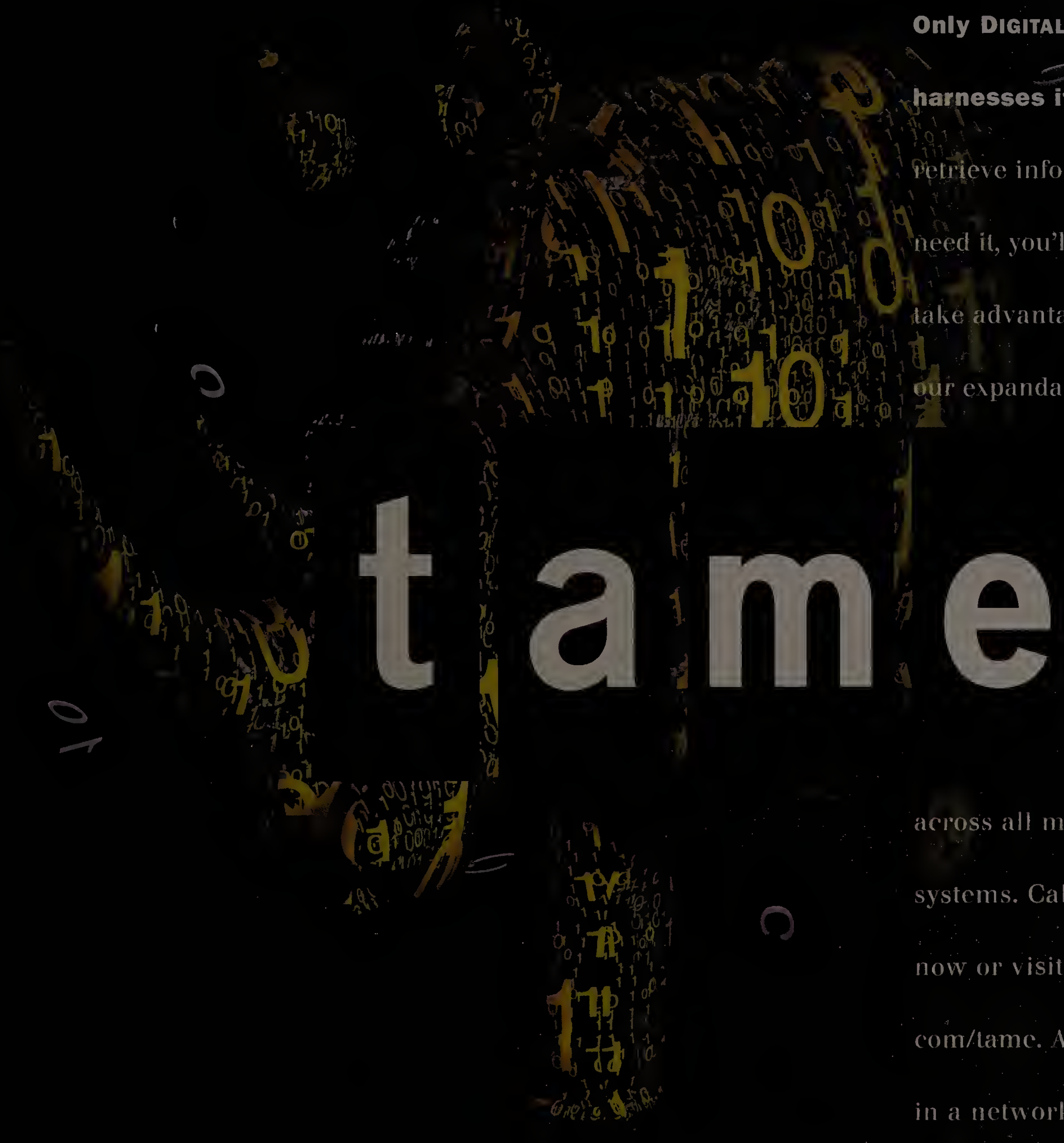
## Tandem to back 64-bit Unix drive

Tandem Computers is expected to throw its weight behind Digital Equipment and Sequent Computer in developing a common 64-bit Unix for Intel's forthcoming Merced chip. Tandem, a wholly owned subsidiary of Compaq is expected to make the announcement later this month, according to a source close to Digital.

## Merger anyone?

Rumors persist that Microsoft is interested in acquiring Firefly Network, Inc., a pattern recognition software vendor in Cambridge, Mass., although neither company is talking. And PeopleSoft in Pleasanton, Calif., is reportedly in talks to buy Vantive Corp., a $100 million maker of sales force and front-office automation software in Santa Clara, Calif. There was no comment from either company.

*Netscape and Sun said they will comply with the Senate Judiciary Committee's request to release business partners from agreements that require the partners to notify them before providing information to the committee. Microsoft said it is negotiating with the committee. "We want to comply, but we want to make sure our trade secrets are protected," said Microsoft spokesman Jim Cullinan. If you have a secret to share, contact News Editor Patricia Keefe at (508) 820-8183 or patricia_keefe @cw.com.*



**Data can be bulky, unwieldy and difficult to control. Only DIGITAL StorageWorks™ harnesses it.** Unless you can retrieve information when you need it, you'll never be able to take advantage of it. That's why our expandable building block design lets you change your storage architecture. And make the most of your data across all major operating systems. Call 1-800-DIGITAL now or visit us at www.digital.com/tame. And get ready to win in a networked world.

*Storage***Works**

digital

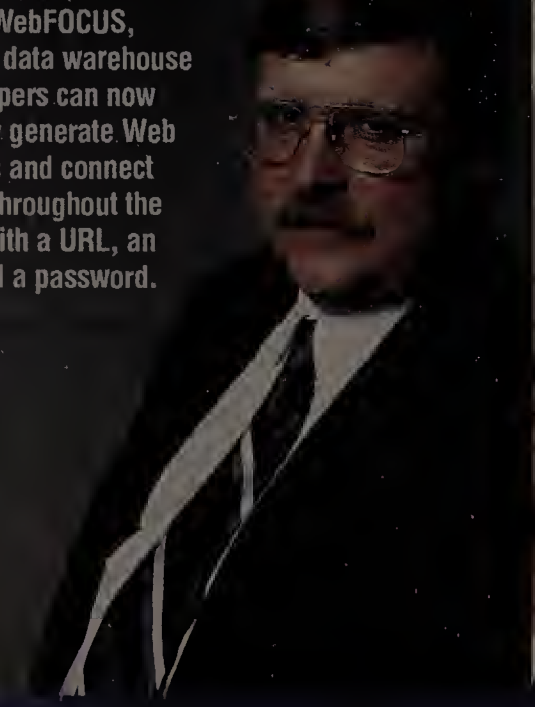
# When business wants to unite the Web and the enterprise...

## Business uses WebFOCUS.

*"We found WebFOCUS to be a fast, cost-effective solution for deploying our data warehouse on the Web."*

*Gary Fisher, Manager Strategic Systems,*
*Sony Electronics Inc.*

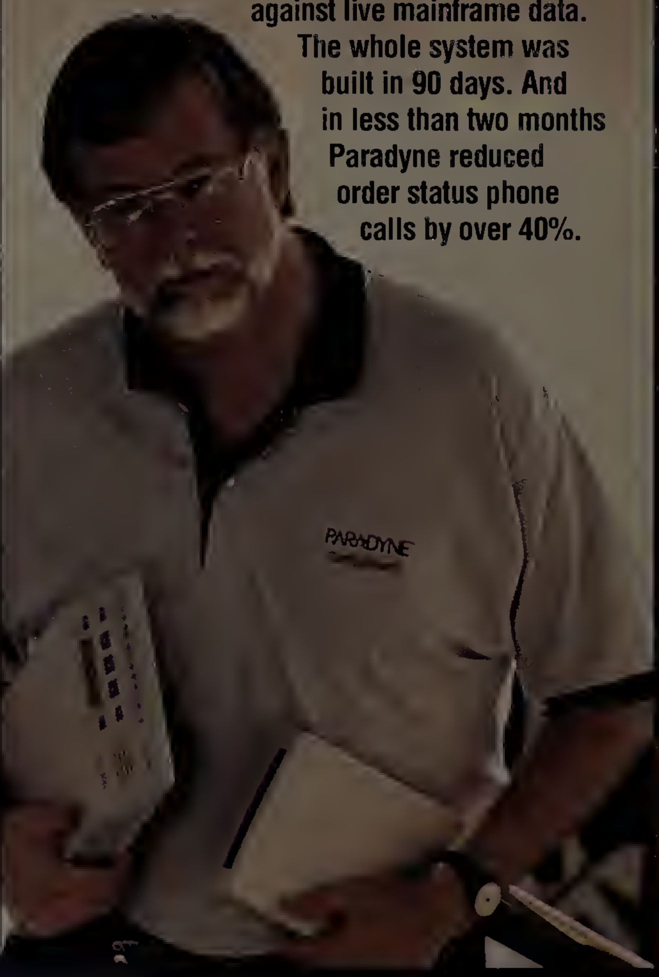
Sony Electronics Inc. decided to build a data warehouse to help manage and control its inventory. To make the information easily available to users in over 20 states throughout the U.S., the company wanted to build Web front ends for reporting and analysis. The company needed software that had report writing features, supported drill down, graphics and complex, multi-pass database queries. Sony looked at a variety of Web-based tools ranging from the very complex and expensive to the simplistic and inexpensive. The company installed WebFOCUS and had reports on their Intranet in days and drill down reporting systems in weeks without writing SQL, CGI, HTML, JAVA, or PERL. Using WebFOCUS, Sony's data warehouse developers can now quickly generate Web reports and connect users throughout the U.S. with a URL, an ID, and a password.



*"In less than two months, we reduced order status calls by 40%, enhanced customer relations, and stimulated new business by driving customers to our Web site."*

*Dan Bond, Data Warehouse Manager,*
*Paradyne Corporation*

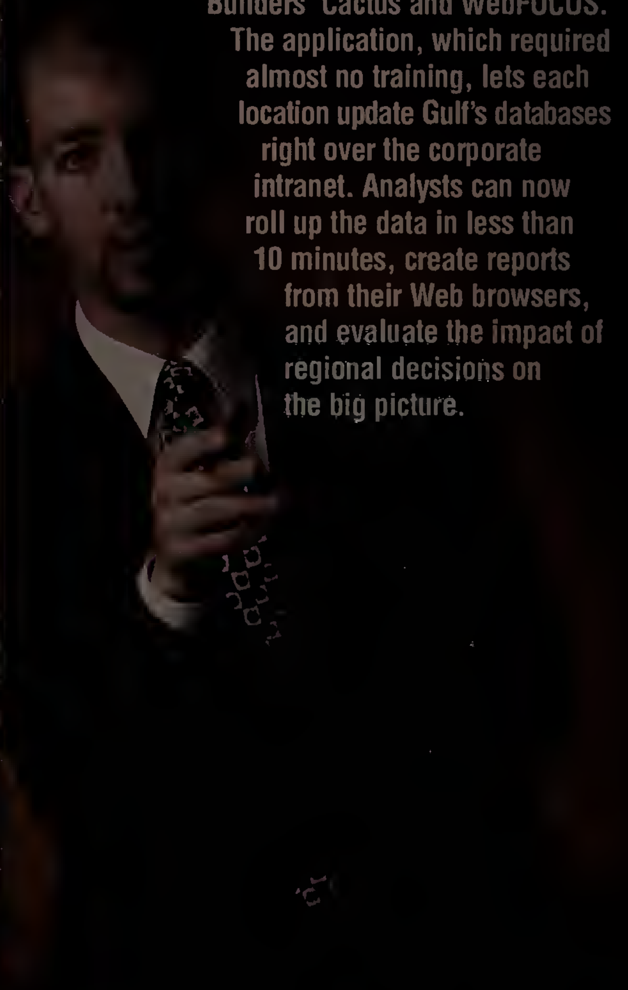
Using Information Builders EDA middleware and WebFOCUS reporting engine, Paradyne built a Web-based order status system that allows customers to launch dynamic queries against live mainframe data. The whole system was built in 90 days. And in less than two months Paradyne reduced order status phone calls by over 40%.



*"With our new intranet-based decision support system we are able to roll up budget projections in less than 10 minutes."*

*Kevin Rasmussen, Expert Application*
*Coordinator, Gulf Canada*

In the oil and gas business, proactive monitoring of production and costs versus operating budgets is a mission-critical function. That's why Gulf decided it needed a faster way to collect and analyze this information from its field locations around the world. The solution... a Web-enabled data entry and reporting system using Information Builders' Cactus and WebFOCUS. The application, which required almost no training, lets each location update Gulf's databases right over the corporate intranet. Analysts can now roll up the data in less than 10 minutes, create reports from their Web browsers, and evaluate the impact of regional decisions on the big picture.



**CALL THE BUILDERS**

Featured At
INFORMATION BUILDERS
TECHNOLOGY
Summit
April 20-22 in New Orleans

**www.ibi.com**
**(800) 969-INFO**
In Canada call (416) 364-2760
WebFOCUS, FOCUS and EDA/SQL are trademarks of Information Builders, Inc.

**Information Builders.**
Building Tomorrow's
Information Systems